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Farm Reports

1988-89

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SOURHOPE FARM1. WEATHER

November began dry but had some very wet days later on. Early December tended to be sunny but very cold before reverting to damper, milder days. The rest of the winter continued unusually frost and snow free with only occasional whitening of the high tops. The onset of spring brought mixed weather with no extremes but June was an exceptionally warm, sunny month with record low rainfall. July more than made up the rainfall deficit but in August there was an improvement with a decent September followed by a mild, showery October with just a hint of winter in the tail.

		<u>Rainfall mm</u>	
1987	November	122.1	
	December	56.3	
1988	January	157.2	
	February	61.7	
	March	63.0	
	April	42.0	
	May	53.3	
	June	22.2	
	July	176.4	
	August	89.8	
	September	72.1	
	October	97.7	
		1013.8	(39.9 ins)
10 year mean		1070.2	(42.1 ins)

2. SHEEP PRODUCTIONa. Mating 1987

Plentiful autumn grass saw all breeding stock come to the tup in good body condition. Weather during the mating period was reasonably open, with no snow and only a few hard frosts recorded.

b. Winter Feeding: 1987-88

Feed blocks were offered to the ewes on 20th January with sugar beet pulp cubes and hay being introduced at the end of the month, with a change to protein cobs in the second half of March. The mild and open winter meant very little hay was fed to outwintered stock, the hill grazings being available to stock throughout the feeding period. Concentrate feeding continued throughout lambing, ewes nursing twins being fed high protein concentrate until the end of May. The hogg inwintering shed being required for the housing of goat kids meant the outwintering of Rigg and Gairs hogs on the Rigg field and the Park Law "flats". All hogs were introduced to feed at the beginning of December and fed until returned to their hefts at the start of April.

A total of 57.8 kg dry matter (hay, sugar beet nuts, concentrates and feed blocks combined) was fed on average to all outwintered ewes at a cost of £6.77 per head. This compares with 75.5 kg dry matter at a cost of £8.83 for the previous winter. The average feed cost of all 1654 outwintered ewes and gimmers was £6.77, the range for individual hefts being from £4.83 to £8.52. The average cost for hogs (all outwintered) was £4.85 compared with £6.30 the previous year. The retained "Thoka" hogs were run with the Project I hogs on the P4 outwintering area.

The ewe and gimmer stock from Rigg and Gairs hefts were again inwintered; the Gairs ewes on the 15th January and Rigg ewes on 18th January. The amount fed to 586 inwintered ewes was on average 134.5 kg dry matter at a cost of £11.59 compared with 130.0 kg dry matter at a cost of £11.58 the previous year. All Rigg and Gairs ewes were scanned mid-February to determine foetal numbers. Feeding level of concentrate (18% CP) being fed from mid-March to twin bearing ewes at the same daily rate as the medium protein concentrate (15% CP) being fed to the single bearing ewes.

All outwintered ewes were also scanned, and on hefts where feed sites and fencing allowed, the twin bearing ewes were fed separately with an 18% protein concentrate replacing the 15% crude protein concentrate fed to single bearing ewes, from the middle of March.

Feed data for both inwintered sheep are shown in the following

tables, the feed items being costed as follows:

	1988 (per tonne £)	1987 (per tonne £)
Hay	58.00	62.00
Green Keil*	143.00	156.00
Ewebol cobs**	142.80	145.64
Ewebol pencils	140.00	140.30
Super ewebol cobs	157.00	162.00
Super ewebol pencils	154.90	159.90
Sugar beet pulp cubes	108.40	116.00
Ewe and lamb food	194.30	195.00
Lamb supplement pencils	164.00	158.66
Barley	117.00	133.33
Feed blocks	200.20	198.00

* Mixture of dried molasses,, sugar beet pulp and dried grass with added minerals, in cube form.

** Concentrates fed to outwintered ewes in cob form, to inwintered ewes in pencils.

TABLE 1 Hogg Feed Data

	Hay (kg)	SBP (kg)	Green Kiel* (kg)	Ewebol Cobs (kg)	Ewe and Lamb Food (kg)	Average Cost/Hogg (£)
All Hogs	8.9	5.0	24.9	1.1	0.4	4.83
Outwintered (636)						6.30**

* Mixture of dried molasses, sugar beet pulp and dried grass with added minerals in cube form.

**1986-87 cost.

Total weight fed 40.3 kg.

TABLE 2 Ewe Feed Data

		Concentrates (kg)	Hay (kg)	Feed Blocks (kg)	Beet Pulp (kg)	Average Cost per Ewe (£)
Outwintered Ewes and Gimmers	Storm Feed to 29/2	-	4.8	2.5	10.7	1.94 (2.94)*
	Pre-lambing Feed 1/3-13/4	6.3	6.8	2.2	12.1	3.09 (3.72)
	Post-lambing Feed from 14/4 (incl. that fed to twin nursing ewes)	10.2	1.6	0.6	-	1.74 (2.17)*
	TOTAL	16.2	13.2	5.3	22.8	6.77 (8.83)*
Inwintered Ewes and Gimmers	Pre-lambing Feed to 13/4	17.8	68.8	-	23.5	9.10 (9.32)*
	Post-lambing Feed from 14/4 (incl. that fed to twin nursing ewes)	9.8	10.4	-	4.2	2.49 (2.26)*
	TOTAL	27.6	79.2	-	27.7	11.59 (11.58)*

* 1986-87 costs.

Total weight dry matter fed: Outwintered 57.8 kg
Inwintered 134.5 kg

c. Lambing and Lambing Performance

The mild winter saw outwintered ewes lose very little weight between pre-tupping and the start of winter feeding. Stock responded well to pre-lambing feed and entered the lambing fields in very good condition. Good weather and few problems gave a successful lambing with 786 pairs of twin lambs present at "marking-time".

The inwintered ewes from Rigg and Gairs hefts were again lambed in the inwintering sheds. The ninety-nine Project I ewes ('82 age) plus the seven 'Thoka' sires were lambed in the hay barn, producing 157 lambs. Lamb mortality data is given in Table 3: overall mortalities was at an acceptably low level.

d. Weaning and Lamb Disposal

Marking and weaning weights (except for Project I twins) were similar to those of 1987. The drop in Project I weaning weights was mainly confined to twins and can partially be attributed to difficulties in isolating twins from singles due to the dilapidated state of fences on this project, coupled with Auchope twins no longer having access to Fasset field in early lactation.

Weaning percentages for South Country Cheviot, North Country Cheviot (including NCC x SCC) and Blackface were 109.5, 128.9 and 125.0 respectively. A detailed breakdown by heft, of weaning percentages and weaning weights is given in Table 4.

One thousand eight hundred and four lambs were sold store (840 Blackface, 700 NCC x SCC, 89 Blackface x Cheviot, 141 South Country Cheviot and 34 Thoka x Cheviot).

Average prices realised in the sale ring for these were:

Blackface	£26.34 per head at an average of 85.4 p/kg liveweight. (£30.70 and 97.3p/kg in 1987).
Cheviot NCC x SCC	£31.81 per head at an average of 111.6p/kg liveweight. (£33.57 and 117.8p/kg in 1987).
BF x Cheviot	£30.93 per head at an average of 103.0 p/kg liveweight. (£31.36 and 108.3p/kg in 1987).

South Country Cheviot	£26.73 per head at an average of 93.3p/kg liveweight. (£33.99 and 115.5p/kg in 1987).
Thoka x Cheviot	£32.00 per head at an average of 101.6p/kg liveweight. (£32.20 and 103.8p/kg in 1987)

One hundred and twenty one Blackface lambs were sold to MLURI (Bush) at an average of £28.05 per head and 14 unthrifty (shott) lambs sold locally for £7.00/head. Two tup hogs sold in January for £33.00 per head. The overall average for the above 1941 sold was £28.63 per head which compares with an average of £30.77 for comparable sales in 1987.

In addition 48 twin Blackface lambs and 28 single lambs were sold (with dams) at approx 2 weeks of age to MLURI (Bush). Ninety lambs were finished off grass and averaged £26.51 per head. Seventy three lambs were housed in early November and finished on Green Keil and hay ad lib and averaged £30.61 per head.

A summary of the disposal of the 1988 lamb crop is as follows:

Ewe lambs retained as stock replacement	- 602
Tup lambs for breeding	- 13
Lambs sold store	- 1820
Lambs sold finished	- 163
Lambs sold to MLURI (Bush)	- 197

TABLE 3 Lamb Mortality 1988 ('Lambs born' figures adjusted for fosterings)

Flock	Lambs born	Stillborn lambs	Deaths, birth to marking	Deaths marking to weaning	Total lamb deaths	%
ssc Fasset	242	13	9	2	24	9.9
NCC x SCC NEHL/Auchope	910	36	34	15	85	9.3
NCC Park Law	241	3	10	2	15	6.2
BF Adlerhope	404	9	17	8	34	8.4
BF Rigg	363	10	4	3	17	4.7
BF Gairs	424	12	5	5	22	5.2
BF Banks (not full recorded)	(441)	(11)	(18)	6	35	7.9
Thoka X	14	1	1	0	2	14.3
STATION TOTAL	3039	95	98	41	234	7.7

TABLE 4 Weaning Percentages and Lamb Liveweights

Flock	Ewes to Tup	Lambs weaned			Weaning weights	
		Total Weaned	% 1987	% 1988	Singles (kg)	Twins (kg)
SCC Fasset	199	218	107.5	109.5	28.8	26.3
NCC x SSC NEHL/Auchope	652	825	124.5	126.5	27.4	23.6
NCC Park Law	163	226	136.8	138.6	29.6	25.4
Total NCC (+NCC x SCC)	815	1051	126.9	128.9	27.8	24.1
BF Alderhope	295	370	144.5	125.4	28.3	27.6
BF Banks	338	406	120.6	120.1	-	-
BF Rigg	276	346	121.6	125.4	28.3	26.9
BF Gairs	310	402	126.7	129.3	30.3	27.0
Total Blackface	1219	1524	128.1	125.0	29.0	27.2
Thoka X	7	12	-	171.4	33.5	27.5
Station Total	2240	2805	125.9	125.2	-	-

These totals include lambs sold to HQ in April/May with their dams.

e. Stock Ewe Lambs

A total of 541 stock ewe lambs were retained as replacements for the eight hefts. In addition 61 Thoka X ewe hoggs were retained at the station for further investigation, and wintered with Project I hoggs on the P4 outwintering paddock. Also 6 Thoka X tup hoggs and 7 Blackface tup hoggs were retained for breeding.

f. Cast Ewe Sales

During the year 35 draft or cast ewes have been sold to Bush site at an average of £36.07 per head. Also 52 ewes with young lambs, ewes with twins at £85.00 per set and ewes with singles at £60.00 per net.

Details of the autumn sales of draft and cull ewes are as follows. (This sale data includes 52 young sheep kept as stock ewe hoggs in 1987.)

	<u>£ per head</u>
40 Cheviot draft ewes 6.1/2 years old (FW)	41.50
38 Cheviot draft ewes 6.1/2 years old (warranted below)	30.00
23 Cheviot feeding ewes	25.00
7 Unthrifty (shott) ewes sold locally	9.85
111 Blackface ewes sold to Medical Research Council	40.00
191 Draft or cast Blackface and Cheviot ewes sold fat	28.57

Livestock reconciliation for the year is given in Table 5.

TABLE 5 Reconciliation of Ewe Numbers 1987-88

Flock	Ewes and Gimmers Nov 1987	Draft and cull ewes	Ewe Deaths	Gimmers brought in	Ewes and Gimmers Nov 1988	Hoggs Nov 1988
SCC Fasset	199	43	4	47	199	50
NCC x SCC NEHL/Auchope	652	130	27	146	641	150
NCC Park Law	163	32	6	41	166	43
BF Rigg	276	51	8	62	279	70
BF Gairs	310	67	2	67	308	74
BF Alderhope	295	55	9	68	299	71
BF Banks	338	69	11	83	341	83
Total Blackface	1219	242	30	280	1227	298
Thoka X	7	-	-	50	57	61
Station Total	2240	4417	67	554	2240	602

g. Wool Sales

The wool was again presented in the unbanded method. A purchased frame to hold the wool sheet greatly assisted packing the unbanded fleeces. Ewe and hogg fleece weights were similar to those of 1987 with the total weight of graded wool from the station being 5,783 kg at an average price of 97 pence per kg. This compares with 5,626 kg at an average of £1.00 per kg in 1987. Total wool receipts showed a fall of £18 or 0.3% from the previous year.

h. Mating 1988

Mild autumn and early winter weather, together with a high summer rainfall ensuring good grass growth, allowed breeding stock to come to the tup in good body condition (Table 6).

TABLE 6 Pre-tupping weights of Ewes, Gimmers and Hoggs November 1987 and November 1988

Flock	Ewes		Gimmers		Hoggs	
	1987	1988	1987	1988	1987	1988
BF Rigg	57.5	57.1	49.8	51.4	33.1	33.2
BF Gairs	57.7	59.0	50.5	50.3	31.3	33.2
BF Alderhope	57.6	58.2	50.4	52.1	34.1	34.8
NCC x SCC						
NEHL/Auchope	61.2	60.4	50.9	47.6	33.8	34.6
NCC Park Law	63.2	64.0	53.9	54.3	34.2	33.5

Seventy-six Thoka X Cheviot gimmers were returned to Sourhope in mid-September after summering at Bush. An estimate of ovulation rate by laparoscopic examination of these ewes was made in October, in an attempt to identify those carrying a copy of the T gene; 57 were subsequently inseminated in November (using endoscopy method) with four Thoka 'X' rams.

Also another objective of the Thoka breeding programme was the introduction of the gene to South Country Cheviot stock, and the same four Thoka 'X' sires were used to inseminate 46 South Country Cheviot ewes.

i. Veterinary Treatment

The overall mortality of the sheep stock in 1987/88 was 3.0%, with the death rate of ewes, gimmers and hoggs being 3.3%, 2.0%, 3.1% respectively. The overall death rate in 1987 was 2.8%.

All outwintered stock were dipped against ticks in late March/early

April. The entire sheep stock were dipped in late July/early August and again in October. The horns of all Blackface lambs were treated twice with CYPOR during the summer to prevent headfly attack.

The entire sheep stock was worm drenched in the autumn, inwintered stock being re-dosed at housing. Outwintered stock were dosed again just before lambing and twin nursing ewes at marking time. Twin lambs were dosed at marking and then monthly throughout the summer until weaning. Single lambs were dosed at marking, mid-July and at weaning.

In the autumn all retained stock ewe lambs received an initial vaccination of Heptavac-P at weaning and a booster six weeks later. Sale lambs received Ovivac-P at weaning and a booster six weeks later. The entire sheep stock received a booster vaccination of Heptavac-P during late March/early April. During October all retained stock ewe lambs received their first, and three year old ewes, their second cobalt bullet.

Twin bearing Alderhope ewes and all Park Law ewes were given a 40 gm copper oxide needle during early March. All Alderhope and Park Law twin lambs were given a 2 gm capsule of copper oxide at marking.

The F1 Fasset re-seed and 2.5 ha of enclosed Fasset hill were grazed with 45 Blackface ewes with twin lambs (from Banks heft), to examine the influence of grazing in combination, swards of re-seeded and indigenous vegetation on the copper status and performance of suckling lambs up to weaning.

3. BEEF CATTLE PRODUCTION

a. General description of herd and breeding policy

At the beginning of December 1987 the suckler herd consisted mainly of the AA x Friesian type of cow along with a few Hereford x Friesians and Welsh Blacks. These had been run initially with a Charolais bull borrowed from Redesdale EHF then followed with a Hereford. Bulling heifers were also run with a Hereford. Mating had been timed to give a February/March calving.

The need to use Sourhope cows on the Banks Nardus grazing experiment (RO 032) required a change of breed in early 1988 for part

of the herd - it being considered that the Friesian cross cow was not a genotype suited to this quality of grazing. To effect this change all the Hereford x Friesian, Welsh Blacks and a number of AA x Friesians were disposed of and replaced by purchased Blue/Grey cows either in-calf or with calves at foot. Two Charolais bulls were purchased in February 1988 and three Charolais bulls hired for the summer so as to provide one bull for each of the four treatment groups and the group of spare cows an RO 032. The remaining AA x Friesian cows were run with a Charolais bull and followed with a Hereford.

Timing of mating on RO 032 will result in the Blue/Grey calving in March/April 1989.

At the end of the year the herd consisted of approximately equal numbers of Blue/Grey and AA x Friesians.

b. Winter Feeding

From early December 1987 to mid-January 1988 the suckler herd was run on the Far End of Hairney Law. During this period cows were offered moderate quality big bale hay to appetite, treated with "Granstock" supplement (200 ml/head/day). High-magnesium hill cow cobs were introduced in early January 1988 at a rate of 1 kg/head/day.

The herd was moved to the Sourhope cattle shed and feeding area in mid-January 1988 when silage feeding replaced the hay treated with Granstock. Silage and cobs were fed until mid-May 1988. Daily consumption of silage was 36 kg per head.

One AA x Friesian cow died in June 1988 after developing hypomagnesaemia. This animal was in a group which was being used to assist with grazing control on the Banks Nardus grazing experiment. Blood tests revealed that the AA x Friesians were low in magnesium. Magnesium boluses were administered to these cows immediately.

c. Calving Performance and Calf Growth

Forty-five of the 50 cows and heifers originally in the herd calved. One cow was slaughtered prior to calving after breaking a foreleg and 4 cows proved to be barren. Three cows bore still-born calves and one calf died when 4 weeks old. Forty two calves were reared

(one member of a set of twins was fostered with a cow whose own calf was still-born). One calf was weaned prematurely (3/6/88) when its mother died of hypomagnesaemia. Birth and weaning weights of those calves in this group, retained until weaning, are set out in Table 7 below.

The 20 purchased in-calf Blue-Grey cows produced 20 live calves. There were no still-births but one calf died when 6 weeks old. Calves in this group had been sired by three different breeds of bull - Charolais, Simmental and Limousin.

The 19 surviving calves and the 10 Charolais x calves transferred with their dams from House o' Muir in May 1988, along with the single Charolais X from the AA x Friesians, were retained over the 1988/89 winter to be sold in 1989.

TABLE 7 Calf Performance

Breed	Numbers	Average Birth Weight (kg)	Average Weaning Weight (kg)	Average LWG Birth - weaning (kg)	Average Daily LWG (kg)
Hereford X					
Bullocks	7	35.0	277.0	242.1	1.04
Heifers	3	34.0	262.7	225.0	0.91
All Hereford X	10	34.7	272.8	237.0	1.0
Charolais X					
Bullocks	10	43.5	307.0	263.5	1.08
Heifers	11	40.9	274.6	233.7	0.97
All Charolais X	21*	42.1	290.0	247.9	1.03

*Prematurely weaned calf not included.

d. Replacement Policy and Numbers

At start of the year the herd contained 5 AA x Friesian heifers, 7 Hereford x Friesian, 3 Welsh Black and 35 AA x Friesian cows along with 2 Hereford bulls. Two Charolais bulls were purchased in

February 1988. Twenty in-calf Blue/Grey cows were purchased in February 1988 and a further 10 with calves at foot transferred from House o' Muir in May 1988.

Three AA x Friesians were culled during the year and one AA x Friesian died after developing hypomagnesaemia. A further 11 AA x Friesian cows were not mated and sold to Animals and Grazing Ecology Division in November 1988.

Eight Blue/Greys diagnosed as barren in November 1988 were transferred to Hartwood along with 2 in-calf Blue/Greys to Glensaugh. Six in-calf Blue/Greys were transferred from Hartwood at the same time.

One Hereford bull was culled during the year.

At 30th November 1988 the herd consisted of 25 AA x Friesian in-calf cows, 26 Blue/Grey in-calf cows, 3 Charolais bulls and one Hereford bull. Five more in-calf Blue/Greys are to be purchased and 5 heifers will be transferred from Glensaugh.

e. Cattle Sales

One cow which broke a foreleg was slaughtered and realised £126. Two barren cows were culled and made £330 each. The older of the two Hereford bulls was sold for slaughter and realised £537.

The 7 Hereford x Friesian and 3 Welsh Black cows were sold in April 1988 with their calves at foot and average £657 each.

Ten Hereford X and 21 Charolais X suckled calves were sold in late October/early November 1988. Table 8 sets out sale weights and prices.

In April 1988 6 yearling stores carried over from the 1987 calving were sold. The 3 bullocks in this group weighed, on average, 355.5 kg and realised £456.66 per head (128.4p/kg). Weights and price for the 3 heifers were 338 kg and £455.66/head (134.8p/kg). Prices of this level for store heifers indicated that they were being purchased for breeding.

TABLE 8 Calf Sales (Spring born calves sold at Autumn sales)

	Number Sold		Weights (kg)		Price per head (£)		Price per kg (£)	
	'88	'87	'88	'87	'88	'87	'88	'87
Charolais X	10	15	315.2	303.0	430.00	378.86	1.36	1.25
Hereford X	7	2	277.0	286.0	379.43	300.00	1.36	1.25
Bullocks	10	15	315.2	303.0	430.00	378.86	1.36	1.25
Heifers	11	20	274.6	279.9	328.72	298.95	1.20	1.07
All calves	21	35	293.9	289.8	376.95	333.20	1.28	1.15

5. GOATS

a. Mating 1987

One hundred and nine feral and feral cross does were artificially inseminated in early November using fresh semen from Tasmanian and Icelandic bucks. A further 72 similar does were served naturally with these sires and also a feral buck.

Sixty eight domestic type does were used as recipients in an embryo transfer programme using fresh embryos from Tasmanian and Icelandic does, and frozen embryos imported from New Zealand. The twelve donor does used in this programme were afterwards served naturally by either a Tasmanian or an Icelandic buck.

b. Winter Feeding 1987-88

The feral and cross feral does were outwintered on the Near Wether Paddock. Concentrate feeding started in December at 225 g/head/day and gradually increased to 350 g/head/day at the beginning of March. Hay was introduced at 130 g/head/day in mid-January and increased to 450 g/head/day by mid-March. These feeding levels were maintained throughout the kidding period and feeding of concentrates to lactating does finished in early May.

The domestic females were housed on 14 January. The ration at housing consisted of 685 g/head/day of concentrate and 685 g/head/day of hay. These levels were gradually increased during the winter feeding period to a maximum of 1,100 g/head/day of both concentrates and hay prior to kidding in late April. Concentrate feeding continued after turnout and stopped at the end of May.

Two hundred and two male and female kids were housed on arrival from Glensaugh at the end of October. The ration for male kids at housing was a total of 799 g/head/day of concentrate and hay in equal proportions, rising to 1,260 g/head/day at turnout to grass. Female kids at housing were fed 180 g concentrate/head/day and 350 g/head/day of hay increasing to 1060 g/head/day of concentrate and hay in equal proportions by turnout in early April. Concentrate feeding continued outside until sufficient grass became available during early May.

The bucks were outwintered on an improved hill pasture. They were fed 200 g/head/day of concentrate from December to April. Hay was fed as required during periods of adverse weather.

c. Fibre Harvesting

Cashmere fibre was harvested in March from all housed kids, adult feral and cross females by hand combing.

A 10 cm² fibre patch sample was shorn from the mid-side of each male kid in September to assess fibre quality and length. Similar patch samples were taken monthly from a group of twelve lactating does and their F1 kids (Tasmanian and Icelandic) to determine the seasonal pattern of cashmere growth.

d. Kidding

Good weather contributed to making a successful first kidding at Sourhope. Strong kids were quick to rise and, with the exception of a few ferals, does all had sufficient milk.

A total of 281 kids were born of which 12 were still births. Of the 269 live kids, a total of 92 were born to domestic dams which were kidded inside and turned out after 48 hours. The remaining 177 live kids were born to feral and feral cross does. After kidding in E3 paddock, does with singles were grazed on rough pasture on E4 paddock, and does nursing twins given improved pasture on Mary's Field.

e. Summer Grazing

The domestic with 'pure' kids at foot were grazed on the Rigg Field throughout the summer.

Bucks were grazed on an improved hill pasture on Hairney Law.

Sixty four does with single kids and 64 castrates were grazed on the Fasset Field in a trial investigating the effects of herbage height on intake and performance of goats grazing sown pastures. The remainder of the herd was grazed extensively on the 'goat area'. This included 40 does not put in kid which were used in an experiment investigating the effect of exogenous malatonin

application on fibre growth and shedding.

Thirty seven goatlings were transferred to Hartwood in early May for grazing trials and returned in September.

Thirty two does with twins were transferred to Bush for lactation studies during the summer.

f. Weaning

One hundred and twenty six male kids were weaned at 12 weeks of age and 133 female kids at 16 weeks, to give a total of 259 kids present at the September weighing.

Twenty four 'pure' female kids were transferred to other CBL members in the autumn.

g. Mating 1988

Fifty eight domestic females were transferred to Bush at the end of September to be used as recipients for an embryo transfer programme using frozen embryos from Siberian cashmere goats.

The remaining 204 feral, feral cross and F1 females were artificially inseminated with fresh semen from either Icelandic or Tasmanian bucks. They were then split in four groups and any returns covered with F1 bucks.

h. Veterinary Treatments

All adult stock were worm dosed in the autumn prior to mating. They were again dosed in March and then at monthly intervals throughout the summer. Kids were first dosed during May and also at monthly intervals during the summer. Monthly faecal and grass samples were taken for a Parasitology Project run in conjunction with the Moredun Research Institute.

Three weeks prior to kidding all adult stock, including yearlings, were given a booster vaccination of Heptavac-P. Kids were introduced to the Heptavac-P system with an initial vaccination in July and a second six weeks later. In conjunction with Hoechst UK a study of local tissue reaction to this vaccine was made on the 64

kids grazing the Fasset Field.

All breeding does were given a 4 g capsule of copper oxide prior to kidding, and the copper status of the herd was monitored throughout the year.

All stock, including the yearlings at turnout, were treated with CYPOR at an application rate which should control tick after combing in late March.

All kids were given Johnes vaccine within twelve hours of birth. All adult stock not vaccinated for Johnes were tested twice during the year.

It was necessary to run all the goat stock, particularly the kids, through a formalin footbath on a very regular basis.

To control coccidiosis, monensin sodium (Romensin 10%) at a rate of 15 g/tonne was included in all concentrate fed. Creep feed, containing this coccidiostat, was made available to all kids at an early age.

6. LAND USE

a. Reseeding

No new reseed was undertaken during the year.

b. Conservation

18.5 ha of reseed were closed in late May for conservation. 13.5 ha of this were cut and yielded 320 tonnes of settled silage. The remaining 5 ha were made into hay.

c. Woodland

Management of the shelter belts on the station is the responsibility of the proprietor's woodland department (Bowmont Forest). During the year no forestry operations were carried out.

d. Forage Cropping

No forage crops were grown during the year.

e. Fertilizer

Only routine fertilizer applications were made during the year.

7. MAINTENANCEa. Buildings

i. The interior of the Metabolism Shed was gutted and the asbestos cladding on two sides replaced with timber space-boarding. A new 2.9 metre doorway was constructed in the south wall to provide a better stock and vehicular access.

ii. The north gable sliding door of the large Cattle Shed was replaced with a box frame/sheet metal swinging gate. A space-board sliding panel was installed in the upper half of this doorway. A concrete sill was also formed across this doorway to exclude run-off from the adjacent roadway.

iii. A 7 x 35 metre concrete feed pad complete with sleeper end wall was constructed in the cattle winter feeding area.

iv. A hardcore feed site measuring 10 x 40 metres was laid down on NEHL adjacent to the feed stores using "Lo TRAK" woven polypropylene fabric overlaid with whin scalplings.

v. Construction of the new partially covered goat/sheep handling pens on Gairs was completed. Two extra holding pens were added to this building to facilitate sheep handling.

b. Roads

i. Extra hardcore was laid on those parts of the hill road where subsidence or wash-out had occurred.

ii. 80 metres of new hardcore road were constructed between the cattle shed and new concrete feed pad.

c. Fencing

i. 150 metres of strained line wire fence were erected along

the East side of the cattle winter feeding area.

ii. A total of 6.7 kilometres of permanent woven wire fencing (part electrified) were erected on Banks, Fasset and the Gairs to contain the Cattle Nardus Grazing Experiment, Sheep Copper Experiment and the Sheep Grazing Behaviour Experiment respectively.

iii. A further 4 enclosures amounting to 10 ha were made goat-proof by adding offset electrified wires to the existing dykes or fences or by erecting new woven wire fencing.

iv. Drystone dykes on Fasset and Park Law were rebuilt where necessary prior to being made goat-proof.

d. Drainage

i. 150 metres of new interceptor ditch were cut along the East boundary of the cattle winter feeding area to take run-off from the Fasset hill directly into the Sourhope burn. This work also incorporated a stock bridge and a 10 metre culvert beneath the new road.

ii. 460 metres of ditch and open drains on Kaime Knowe were re-cut.

8. STAFFING

H.M. Sangster	Officer in Charge
G.D.Gittus	Deputy Officer in Charge
J. Wallace	Head Shepherd
C. Grant	Shepherd
A. Hastie	Shepherd
T.G. Rogerson	Shepherd & Goats
J. Rowe (Jnr)	Foreman/Cattleman
C. Blackie	General Farmworker
Miss P. Geutry	Recording Officer
Mrs D. Wallace	Cleaner
J. Rowe (Snr)	Hostel Keepers
Miss J. Rowe	

T.G. Rogerson appointed 29/11/87
Mrs D. Wallace appointed 1/12/87

9 EQUIPMENT PURCHASES AND SALES

Sales 1 Series 90 Land-Rover

Purchases 1 Series 110 Land-Rover
 1 Yamaha ATV and Trailer
 1 Barnlett Yard Scraper
 1 Ritchie Bale Sledge
 1 PTO Air Compressor
 1 Wood Packing Frame

HARTWOOD FARM

1. WEATHER

The end of 1987 and the first two months of 1988 were warm and unseasonable although wet, with the grass continuing to grow in the absence of persistent frost or snow. March was dry and warm to begin with and the T 200 temperature was achieved by the 9th, however soil 100 mm temperature was only 3.9. The second half of the month was very wet and caused difficulties for lambing. The weather in April was very unsettled; field conditions were such as to allow only a slow rate of fertiliser application and consequent low rate of grass growth. May, although dry, was cool and the rate of grass growth was still low due to low soil temperatures: the dry weather allowed the grass reseeds to be sown relatively easily. June was dry and permitted silage making to proceed smoothly but towards the end of the month the rate of grass growth had declined. July was very wet and the sowing of forage crops was hampered badly but grass continued to grow well. Dipping and silage making were "catchy". August was dry enough to allow the making of 8 hectares of hay and gave the chance to lift the last of the silage. During the early autumn months the grass grew at a dramatic rate due to an absence of frost and poaching. This brought the ewes to the tup in good order. The cows came in during October. Despite snow at the end of November, tupping proceeded satisfactorily.

Rainfall (mm)

		<u>Total</u>	<u>% of Average</u>
1987	December	116	114
1988	January	125	140
	February	99	140
	March	105	169
	April	70	109
	May	60	75
	June	24	31
	July	145	152
	August	131	116
	September	93	83
	October	62	60
	November	28	27
		1216	114

12 month average 1066 mm

2. SHEEP

a. Mating 1987

As we have now come to expect at Hartwood, wet weather was experienced in the autumn leading to poaching problems. Although not as severe as 1986, poaching did become serious where stocking rates were high. Ewes however were in good condition going into mating, grass growth in the autumn having been very satisfactory.

A group of Greyface gimmers and cast age ewes (192) were put to the tup on 21st October. These ewes were synchronised to give a compact lambing before the main lambing got under way. The systems flock (307) was mated from 26th October and the remaining non experimental ewes (268) were mated from 2nd November.

The Blackface flock (212) started mating on 12th November.

Late Autumn and Early Winter Management

Systems ewes were fed concentrates at pasture at up to 300 g/head (14% CP) and 1 kg hay depending on the sward heights on the plots. Once the tups had been removed on December 1st the ewes were housed as the plots began to poach. All the systems ewes were in the shed by 15th December.

The early lambing ewes from the non experimental flock of adult Greyfaces were housed on 8th December in the plastic sheds, the remainder of this group were brought in on 10th February.

The synchronised gimmers and old ewes were housed on 31st December in the plastic sheds.

As usual all the ewes were scanned to determine foetal load. This took place on 11th and 12th of January. For the first time a contractor was brought in to do the job which proved to be very satisfactory with an accuracy of 98%.

The Blackface flock (212), less the 1983 age group (63), were again kept outside on Liquo and fed ad lib silage. The '83 group were housed on 24th December and fed ad lib hay.

b. Winter Feeding

i. Systems studies GF (307)

From coming into the shed the ewes were fed ad lib silage, consumption was measured at 5 kg/head. Silage had a D-value of 64%, DM 22%, ME 10.2 MJ.kg. No supplementary feeding was necessary until 6 weeks pre-lambing when 16% CP concentrate was introduced.

Feed levels were dependent on foetal load and were increased weekly until lambing. At lambing single bearing ewes received 700 g, ewes with twins or gimmers with singles were receiving 1.0 kg and ewes with triplets, or gimmers with twins, 1.3 kg. Silage was phased out at 4 weeks pre-lambing and hay was introduced.

ii. Other Greyface Ewes

These animals were housed in the plastic sheds. Hay was fed in those pens which were inaccessible to the forage wagon but otherwise ewes were on ad lib silage. Feed levels were the same as those for the systems ewes. A group of 152 ewes, all scanned as twins, were put on to an experiment to examine the role of sugar beet pulp in the feeding of pregnant ewes under contract to Trident Feeds.

iii. Blackfaces

The Blackface flock was split this year: the 1983 age group was housed in Rosehall shed on slats, on the 24th December, and fed ad lib hay. Concentrates were introduced at the beginning of January at the rate of 485 g/head/day (14% CP). On 26th February this was increased to 806 g/head/day. The 1984 and 1985 age groups were wintered on Liquo on ad lib silage. 300 g/head/day concentrate was fed from the beginning of January until 26th February when feeding was increased to 690 g/head/day. The flock was moved to West Blaeberry on 11th February.

iv. Wethers and Tups

As in the past these animals were wintered on the moor and were fed ad lib silage. In the summer of 1988 the decision was taken to dispose of the wether flock. The flock was sold on 28th October at Strathaven market.

v. Plants and Soils Flock (24) Blackfaces

These older ewes, not used for breeding, were wintered on spare areas around the Greyface systems fields. These ewes are used during the grazing season for detailed work on Nitrogen cycling.

TABLE 1 Winter Sheep Feeding 1987/88

Group	Silage		Hay		Concentrate		Total Cost/hd £
	kg	£	kg	£	Kg	£	
GF silage based ration	480	3.60	31	1.74	68	8.67	14.01
GF hay based ration	-	-	115	6.44	68	8.67	15.11
BF inside	-	-	96	5.38	53	6.75	12.12
BF outside	510	3.83	10	0.56	28	3.57	7.96

Hay at £56/t Silage at £140.25/ha yield
Concentrate at £127.50/t

c. Lambing

Weather at lambing this year was mostly fair, there were however two occasions when ewes and lambs had to be brought back inside because lambs were becoming chilled. On both these occasions the wind had turned to the east bringing very cold air. As in 1987 ewes and young lambs were kept inside for a day or so after leaving the lambing sheds. This year a part of the tractor shed was bedded with straw and used as a lambing area for the synchronised flock of old ewes and gimmers. After this the floor was then cleaned and disinfected and bedded with clean straw, this then became the holding pens for ewes and lambs.

Lambing performance this year though better than 1987 was affected by an outbreak of E. coli scour in very young lambs. One hundred and eighty lambs died around the period of lambing. Of these, 58 died from the effects of E. coli/watery mouth scour, 35 died within 24 hours from crushing, injury or other causes due to lambing indoors, 6 died by drowning or trampling in muddy conditions after turnout. Of these early deaths, 45% were unexplained, however veterinary advice indicated that many of these were thought to be due to the E. coli scour.

TABLE 2 Greyface Lamb Mortality 1988 Lambing

Ewe Age	Lambs Born			Deaths of		Total Deaths	
	Still born	Live	Total	Live Lambs	%	No	%
Gimmers 1986	6	375	381	70	18.6	76	19.9
1985 Age Group	22	303	325	45	14.5	67	20.6
1984 Age Group	9	294	303	53	18.0	62	20.4
1983 Age Group	6	186	192	25	13.4	31	16.1
1982 Age Group	2	76	78	12	15.8	14	17.9
	45	1234	1279	205	16.6	250	19.5

TABLE 3 Greyface scanning and weaning percentage 1987/88

Ewe Age	No Ewes to Tup	Lambs Scanned		Lambs Weaned	
		No	%	No	%
1986 Age Group	242	393	162.4	305	126.0
1985 Age Group	192	327	170.3	258	134.3
1984 Age Group	175	316	180.5	241	137.7
1983 Age Group	114	199	174.6	161	141.2
1982 Age Group	44	76	172.7	64	145.5
	767	1311	169.6	1029	134.2

GF Weaning % (1986....125%)
(1985.....110%)

BLACKFACE WEANING: Weaning percentage in the BF flock ewes was 101% at an average weight of 29.3 kg.

d. Lamb DisposalTABLE 4 Lamb Disposal

SOLD STORE (1987 CROP)				Total Price £	Average Price/hd £
8/12/87	L.S. Smellie	38	Suffolk	1459	38.40
10/12/87	L.S. Smellie	251	Suffolk	9890	39.40
		66	Fr x	2322	35.18
		7	BF	195	27.90
6/ 1/88	AGED	21	BF	693	33.00
12/ 2/88	J.H. Lennox	33	BF	1089	33.00
		6	Suffolk	198	33.00
		16	Other	160	10.00
22/ 2/88	J.H. Lennox	28	BF	540	19.28
19/2/88	Euroscot	2	BF	20.5	10.25
LAST OF 1987 CROP		468		16566	35.40
SOLD STORE (1988 CROP)					
2/ 6/88	AGED	10	Suffolk	400	40.00
1/ 7/88	C. Hepp	2	Suffolk	64	32.00
12/ 8/88	L.S. Smellie	60	Suffolk x	2205	36.75
26/8/88	L.S. Smellie	145	Suffolk x	5326	36.73
26/ 8/88	L.S. Smellie	11	BF x	346	31.50
16/ 9/88	L.S. Smellie	210	Suffolk x	6705	31.92

31.

30/ 9/88	L.S. Smellie	152 Suffolk x 5 Riggs	4849 133	31.90 26.60
7/10/88	L.S. Smellie	212 Suffolk x	6779	31.98
14/10/88	L.S. Smellie	96 Suffolk x 101 BF	3100 3078	32.29 30.48
21/10/88	L.S. Smellie	137 Suffolk x 80 BF	3920 1936	28.61 24.20
28/10/88	L.S. Smellie	86 Suffolk x 36 HB 14 GF 47 BF	2608 1105 357 838	30.32 30.70 25.50 17.83
TOTAL SOLD STORE (1988)		1404	43749	31.16

NB. 263 lambs were on forage rape in December 1988

SOLD FAT (1987 CROP)

8/12/87	L.S. Smellie	46 Suffolk 2 BF	1971 56	42.85 28.00
19/ 2/88	Euroscot	9 BF	241	26.78
LAST OF 1987 CROP		57	2268	

SOLD FAT (1988 CROP)

19/ 7/88	L.S. Smellie	32 Suffolk	1242	38.81
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Breed reference - BF Blackface
BF x Blackface x
HB Half Breed
GF Greyface
Fr x Friesland

Due to good grass growth in the second half of the summer 484 cross lambs were bought from Glensaugh to graze the young grass. They were bought at £32 a head and kept on till the autumn when they were sold as stores. They are included in the above sales table.

f. Cast Ewe Sales

TABLE 5 Draft and Cast Ewes Sales

				Total Price	Average Price/Hd
3/ 6/88	AGED	6		450	75.00
3/ 6/88	Chapman	1		18	18.00
12/ 8/88	L.S. Smellie	7 (W)*		244	34.90
		9 (BM)*		280	31.10
		11 (F)*		318	28.90
16/ 9/88	L.S. Smellie	53		1772	33.44
30/ 9/88	L.S. Smellie	3 (W)*		106	35.40
		6 (BM)*		185	30.90
28/10/88	L.S. Smellie	8 (F)*		201	25.10
		104		3574	34.37
Transfers to Moredun		8		-	-
		112		3574	

* W = Warranted
 BM = Broken Mouth
 F = Feeders

TABLE 6 GF Breeding Stock Replacements

				Total	Av/hd
24/	8/88	Lawrie & Symington, Lanark	197 Gimmers	15957	81
31/	8/88	United Auctions East	12 Suffolk Tups	4656	388

g. Wool SalesTABLE 7 Wool Clip

	No	Yield (kg)	Av Yield/ Head (kg)	Yield per 100 Ewes (kg)
GF	700	2083	2.97	297
GF hoggs	62	243	3.92	12
BF ewes	199	416	2.09	209
Suffolk tups	32	91	2.84	31
		2833		

Total receipt for wool (net of VAT) = £3146
 Total Yield = 2833 kg
 Average price per kg = £1.11

h. Mating 1988

The condition of ewes this year at mating was very good. Grass was in plentiful supply and the ewes recovered very well after weaning. The mean condition score at mating of the systems Greyfaces was 3.78.

As last year the over age ewes and the gimmers were synchronised using progesterone sponges.

Ewe Breed	Sub Flock	No.	Ram	Mating Date	Synchronised
GF	Systems Studies	307	Suffolk	26/10/88	NO
GF	Reproductive Performance	216	Suffolk	26/10/88	NO
GF	Animals and Graz Ecol	80	Suffolk	28/10/88	NO
GF	Gimmers and Cast Ewes	248	Suffolk	18/10/88	YES
BF	Reproductive Potential	134	BF	15/11/88	NO

i. Sheep Health

The main health problems in adult Greyfaces this year were again of a respiratory nature. Pasteurella pneumonia remains a problem in spite of the flock being routinely vaccinated. Jaagseikte accounts for a third of all ewe losses: several animals were sent to the Moredun Institute and one to Glasgow Vet School to help with research into the disease. In an attempt to contain the Jaagseikte problem, replacement gimmers were this year purchased locally rather than from the North East of Scotland where the disease is apparently more widespread.

The overall ewe death rate stands at 8.4%.

Gimmers are introduced to the Heptavac-P vaccination programme on arrival at Hartwood. Thereafter all ewes receive a booster vaccination 4 weeks before lambing.

All ewes are given an anthelmintic dose pre lambing and pre mating. Ewes and lambs were dosed monthly throughout the grazing season.

At lambing time, as referred to above, an outbreak of E-coli scour caused considerable losses in young lambs. The local Vet practice identified the bacterium causing the problem but unfortunately it was resistant to most antibiotics. An E-coli vaccination programme has been adopted in 1989.

The only other health problem came in late autumn. A group of lambs which had been very intensively stocked on an experiment were found to have a serious coccidiosis burden. Veterinary advice was again sought and the problem was successfully treated, there was nevertheless a serious reduction in animal performance.

3. BEEF CATTLE PRODUCTION

a. Cattle at Hartwood - General Description - Breeding Policy

The suckler herd comprised some two hundred Hereford Friesian and Blue Grey cows and heifers. There are three distinct calving groups within the herd; spring, autumn and winter. The spring calving group consists of sixty Hereford Friesian cows for use on cattle systems studies. This year there is a further batch of thirty four Blue Grey cows due to calve at Hartwood in spring 1989. These are due to be ovariectomised after calving and the majority of them were transferred from Glensaugh.

There are fifty two autumn calvers, all Hereford Friesian, not including replacement heifers at present on House o' Muir, for cattle systems work.

The winter calving group is made up of approximately equal numbers of Hereford Friesian and Blue Grey cows. Replacements for this group are currently at House o' Muir and a number of cows are also at Glensaugh.

Most heifer replacements are purchased in-calf, usually to a Limousin bull. Afterwards a Charolais bull is used for the second calf onwards. Most of the rebreeding is done by natural service.

b. Winter and Supplementary Feeding

1987/88

From early winter 1987-88, winter calvers inside were split into two pre-trial groups, high and low, both fed on hay to bring them into the appropriate body condition for experiment. By mid October, both spring and autumn calvers were inside. These were fed silage in the Indescon shed. Hay based diets were fed in the Atcost shed.

A group of forty Blue Grey cows went into the Atcost shed from Glensaugh in March 1988, synchronised to calve in March. These cows were fed hay plus concentrates after calving.

All cattle had been turned out of the Indescon shed by mid May

1988, although some winter calving cows remained in the other shed until a month later.

1988/89

Winter calvers were again brought inside early to regulate body condition prior to winter work. They had been off the farm for summer grazing and went into the Atcost shed in October 1988. They were given 25 kg silage per head daily plus either 1 kg or 9 kg concentrates (after calving) depending on treatment. This represented a departure from normal feeding procedure in the Atcost shed where hay had always formed the basis of the winter diet. This year, due to a plentiful supply, silage has been individually fed to cows in this shed, and this system has been found to work well. It has also reduced greatly the need for bought-in hay.

Systems spring and autumn calvers were withdrawn from plots when sward heights fell below 4 cm or when serious poaching arose. These cattle were all in by 8th November 1988. They were fed silage alone to achieve target condition scores. Mean daily intake of these cows was 30 kg (spring calvers) and 38 kg (autumn calvers). Autumn calves were given ad lib good quality hay and were worked up over the winter to a maximum level of 2 kg creep pellets each per day.

Twenty four stirks were overwintered, firstly in the Indescon shed, then in an empty hay shed. This batch was made up of a group of Friesian bullocks which had been on a mixed cattle, sheep and goats grazing experiment during the summer of 1988, plus other home bred stock not sold in the autumn. These were fed on ad lib silage in round bales and 3.5 kg barley per head daily. In addition, there were eleven Angus x Friesian cows on a ration of chopped straw, molasses and concentrate in the Metabolism house, on a body composition experiment.

Minerals were offered to all grazing cattle and were included in the winter rations and cow cobs containing magnesium were given during the spring and autumn high risk 'staggers' periods.

Winter feed allocations for 1987/88 are shown in Table 1.

TABLE 1 Winter Feed Allocations by Group

<u>August-October</u>	<u>Calvers (44)</u>
Silage	300 tonnes
Cow cobs	2.75 tonnes
Minerals	1.21 tonnes
Barley for calves	5.20 tonnes
Hay for calves	3.60 tonnes

<u>November-January</u>	<u>Calvers (51)</u>
Hay	64 tonnes
Concentrate	44.08 tonnes
Cow cobs	3.20 tonnes
Minerals	1.40 tonnes
Calf creep feed	1.10 tonnes

<u>February-April</u>	<u>Calvers (60)</u>
Silage	300 tonnes
Cow Cobs	3.75 tonnes
Minerals	1.65 tonnes

c. Calving Performance and Calf Growth

During the period of this report from 1st December 1987 to 30th November 1988, 189 calves were born alive at Hartwood, while the maximum number of young stock on the farm, including adjacent rented summer grazing, reached 253 on 21st September 1988 before the autumn sales.

During this time calving periods were as follows:- 8th November 1987 till 12th January 1988, 8th February till 5th May 1988, 29th August till 20th October 1988. During 1988/89 winter, calving started on 8th November 1988.

At winter and spring calvings, calving problems have been infrequent. However, during autumn calving, average birth weights were high, several being born at over 50 kg and one at 62 kg, and a number of serious difficulties arose as a result. Weather in autumn was mixed, but once calves were on their feet and

established, they made good progress. Mean birth weights are shown in Table 2.

The number of calves born per hundred cows run with the bull was: eighty two in winter 1987/88, ninety one in spring 1988, ninety in autumn 1988.

Calf liveweight gain performance is shown in Table 3.

TABLE 2 Average Birth Weights (kg) of Charolais Cross Calves

	<u>Heifers</u>	<u>Bullocks</u>
<u>Winter born calves 1987/88</u>		
Charolais x Hereford Friesian	42.0	44.2
Charolais x Blue Grey	40.5	42.2
<u>Spring born calves 1988</u>		
Charolais x Hereford Friesian	44.3	40.2
Charolais x Blue Grey	39.0	40.2
<u>Autumn born calves 1988</u>		
Charolais x Hereford Friesian	48.3	53.0
<u>Winter born calves 1988/89</u>		
Charolais x Hereford Friesian	40.3	44.1
Charolais x Blue Grey	35.4	40.4

TABLE 3 Calf Growth 1988

	Hereford x Male	Friesian Cows Female	Blue Grey Cows Male	Blue Grey Cows Female
<u>Calves born autumn 1987</u>				
Av weaning weight	318	298		
Av liveweight gain/day	0.91	0.84		

Average age of all autumn calves at weaning 296 days

Calves born winter 1987/88

Av weaning weight	293	292	264	265
Av liveweight gain/day	0.81	0.82	0.71	0.72

Average age of all winter calves at weaning 308 days

NB: Half of winter calves early weaned for experiment not included in these data.

Calves born spring 1988

Av weaning weight	252	254	231	217
Av liveweight gain/day	1.02	1.00	0.97	0.90

Average age of all spring calves at weaning 207 days

d. Replacements and transfers from House o' Muir

By the beginning of 1988, a total of twenty nine heifers, sixteen Blue Greys and thirteen Hereford Friesians were being held at House o' Muir as replacements for the Hartwood experimental herd. In February 1988, a further nine Blue Grey heifers were purchased through Hawick market. These went directly to House o' Muir. Between then and June, all heifers were transferred to Hartwood.

Replacement purchasing began again in early August when six Blue Grey heifers, four in-calf and two with calf at foot were obtained from a farm in Clackmannan, followed by a further six Blue Greys in-calf from a Stirlingshire farm. A total of fifteen Hereford

Friesian in-calf heifers were bought either by auction or on farm in the same area. To make up numbers, one Hereford Friesian heifer with a calf at foot was bought from a farm beside Hartwood. All these heifers have been overwintered at House o' Muir.

In late 1988 eight barren Blue Grey cows were transferred to Hartwood to be bulled and then to join the winter calving group. Nine calves have been bought from neighbouring farms for setting-on during the period of the report. An eighteen month old replacement Charolais bull was bought at Perth in February 1988. Thirty three six month old Friesian and cross Friesian bullocks were purchased in May 1988 for work on a mixed grazing experiment at Hartwood.

Details of cattle purchased are given in Table 4.

TABLE 4 Cattle Purchases

Purchased from/at	Date	Breed	No	Price/hd
<u>In-calf Heifers</u>				
Arndean Farm	11/ 8/88	BG	4	£800
Northfield Farm*	24/ 8/88	BG	6	£830
Kildean Market	7/ 9/88	HxF	9	£800
Cowiehall Farm*	10/ 9/88	HxF	6	£850
*per Kildean Market				
<u>Calved Heifers</u>				
Arndean Farm	11/ 8/88	BG	2	£900 with AA x calf at foot
Easterhouse Farm	9/ 9/88	HxF	1	£850 with Lim x calf at foot
<u>Cow Transfers</u>				
Sourhope Farm	24/11/88	BG	8	FOC
<u>Bull</u>				
McDonald Fraser Perth Market	1/ 3/88	Char	1	1800 gns

Calves

Newmains	12/ 2/88	Bull	1	£90
East Tarbrax Farm Shotts	13/ 3/88	Lim x Heifer	1	£80
Watsonfoot Farm Newmains	17/ 3/88	Lim x Heifer	1	£150
East Tarbrax Farm Shotts	21/ 3/88	Fries Bull	1	£90
Auchterhead Farm Newmains	16/ 9/8	Char x Heifers	1	£150
East Tarbrax Farm Shotts	29/ 9/88	Fries Bull	1	£90
East Tarbrax Farm Shotts	4/10/88	Fries Bull	1	£90
East Tarbrax Farm Shotts	23/11/88	Fries Bull	1	£100
East Tarbrax Farm Shotts	25/11/88	Lim x Bull	1	£150

e. Cattle SalesCalves

A single unthrifty four month old calf went for slaughter in February 1988 and two young calves were sold with their mothers at Strathaven in May.

The first major sale of calves was at Strathaven in September when forty six mainly autumn born calves were sold. Thirty seven spring born calves were sold at Kildean, Stirling in mid October while shortly afterwards, sixty three winter and spring born calves went to Hamilton Market, and finally, thirty one similar calves together with sixteen Friesian bullocks from the mixed grazing experiment

were sold through Strathaven in late October.

Cows

Two cows were sold fat at Hamilton in March and five cows surplus to requirement, two with calf at foot, went to Strathaven in May. Ten Blue Grey cows were sold to Sourhope in April and six were transferred to Sourhope in November.

Over the year, forty four cows went to Larkhall Abattoir, thirty eight of which were Blue Greys slaughtered at the end of an experiment. Six cows, dead or fallen, went to the knackery.

Bull

The ageing bull, Newhouse Romulus, went to Shotts slaughterhouse at the end of 1987.

Details of suckled calf sales are given in Table 5 and information on other sales in Table 6.

TABLE 5 Sales of Suckled Calves

Sold at	Date	Breed	Sex	No	Price/hd
<u>1987/88 Autumn and Winter Calves</u>					
Strathaven Market	22/ 9/88	Char x	M	20	£466
		Char x	F	23	£373
		Lim x	M	1	£394
		Lim x	F	1	£401
		Fries	M	1	£293
<u>1988 Spring Calves</u>					
Kildean Market	10/10/88	Char x	M	19	£334
		Char x	F	18	£291
<u>1987/88 Winter and Spring Calves</u>					
Hamilton Market	13/10/88	Char x	M	30	£397
		Char x	F	31	£342
		Fries	M	1	£240
		Lim x	F	1	£289
Strathaven Market	27/10/88	Char x	M	14	£309
		Char x	F	15	£284
		Lim x	F	1	£270
		Fries	M	16	£243

TABLE 6 Disposal of Cows and Bull

Sold at/to	Date	Breed	No	Price/hd £
COWS				
Larkhall Abattoir	29/12/87	HxF	1	196
Hamilton Market	9/ 3/88	BG	2	522
Hodgkinson Stock Uplifter	13/ 3/88	HxF	1	5
Hodgkinson Stock Uplifter	12/ 4/88	HxF	1	5
Sourhope Farm	12/ 4/88	BG	10	600
Strathaven Market	26/ 5/88	BG & HF	5	594 *
Hodgkinson Stock Uplifter	2/ 6/88	BG	1	5
Hodgkinson Stock Uplifter	27/ 7/88	HxF	1	5
Larkhall Abattoir	19/ 8/88	HxF	1	420
Larkhall Abattoir	9/ 9/88	HxF	1	440
Hodgkinson Stock Uplifter	17/ 9/88	HxF	1	5
Hodgkinson Stock Uplifter	1/10/88	HxF	1	5
Larkhall Abattoir	18/10/88	HxF	1	307
Larkhall Abattoir	24/10/88	BG	12	350
Larkhall Abattoir	26/10/88	BG & HF	14	350
Larkhall Abattoir	30/10/88	BG	14	350
Sourhope Farm	24/11/88	BG	6	FOC

*Two with calf at foot.

BULL

Shotts Abattoir	11/12/87	Charolais	1	733
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f. Routine Veterinary Treatments and Cattle Health

All cows received E coli/Rotavirus anti scour vaccine about one month before calving. During the summer, all young stock was dosed with Panacur wormer at regular intervals. A group of Friesian stirks was treated with Ivomec. During December 1988, autumn calves were given long acting antibiotics against pneumonia and also

during December, winter calvers were given a booster of multi-vitamins. High magnesium cow cobs and high magnesium mineral licks were given routinely as described earlier. A high phosphorous supplement was given to cows at re-bulling periods.

From 1st December 1987 till now, pneumonia has presented the biggest problem in cattle health. This has occurred in autumn born calves during the winters of both 1987/88 and 1988/89, about six weeks after housing. The condition was characterised by the sudden onset of coughing and high temperatures in a large proportion of the calves. In both years, treatment has been extensive, but also swift and successful.

Pneumonia has also occurred from time to time in a few calves born this winter in the Atcost shed. This is unusual and may reflect the abnormally mild winter temperatures. In mid February 1988, a number of cows with young calves were turned out to the woodland beside Reservoir Field. Some of these calves also suffered from pneumonia, although they too also responded well to treatment. A number of Friesian bullocks were quite badly affected in the autumn after the mixed cattle, sheep and goat grazing experiment. In addition, isolated cases occurred throughout the whole season among young cattle.

Treatment of scour among calves born in the winters of 1987/88 and 1988/89 was time consuming but effective.

One cow which underwent a caesarian at calving in spring 1988 failed to make a recovery and died a few days later. However most calving difficulties occurred during the autumn calving due to large calves being produced. One cow had subsequently to be slaughtered.

Over the year, some cows were treated for staggers symptoms including two cows in the winter of 1987/88, which had calved in the previous autumn.

Miscellaneous conditions requiring treatment included foul-in-the-foot, mastitis and pink eye, one cow each. In the period of the report two calves had slight joint ill and one a throat abscess. All these conditions were treated successfully. One cow died of Johne's disease. A spring calf died of cerebrocortical necrosis.

5. LAND USE

Cropping Summary 1988

Crop	Area	Yield
Silage	20 ha 2 cut)	1550 t also 250 of 4 x 4 bales
	30 ha 1 cut)	
	30 ha *systems)	
Hay	7 ha	65 t
Rape	8 ha	---
Grass reseed	31 ha	---
Sheep Systems	29 ha	
Cattle Systems	52 ha	
Sheep Grazing	31 ha	
Cattle Grazing	35 ha	
Various Experimental areas	38 ha	
Planted in trees	3 ha	

*Surplus grass cut from cattle and sheep systems

a. Reseeding

Thirty one hectares were reseeded in rotation. This year a new seeds mixture was adopted to include more clover and a wider spread of maturing dates for the perennial rye grasses used.

SEEDS MIXTURE 1988

Cultivar	Description	Rate per ha (kg)
Baranna	early PRG	6
Condesa(T)	late PRG	6
Contender	late PRG	8
Magella	intermediate PRG	8
S 184	small leaf white clover	2
Kent wild white	small leaf white clover	0.5
Huia	medium leaf white clover	2
		32.5 kg

Sixteen hectares of these reseeds were sown with a nurse crop of 9 kg per hectare of Westerwolds, in Strip, Hillhouse, West Blaeberry, Hayshed and McLarens. The grass established well but weeds were a problem as they did not germinate until July when there were frequent showers and some chickweed infestations had to be sprayed twice. Four hectares of one field did not establish well and day nettles choked the grass. Half of this field required to be reseeded again.

The Westerwold nurse crop established a good take of the main mixture and allowed an 8 tonne per hectare silage crop. Although this silage is of poorer quality it did appear to help in sward regeneration, and provided some return in the reseeding year.

b. Conservation

Silage cutting commenced on the 6th June and continued all month with slow progress being made in the small areas of the cattle systems and repeated breakdowns of the forage harvester. The silage yield was good with some fields yielding close to 30 t/ha in the first cut. The quality of the first cut was good although protein levels were low. Second cut silage commenced in the second week of August and was a good yielding crop of good value.

One field of seven hectares that was too mature for silage was made into hay during a dry spell in the first week of August, most of this hay was of a satisfactory quality.

SILAGE AND HAY ANALYSES

	DM	D value %	ME MJ/kg	DCP g/kg
1st Cut silage	19.5	64	10.3	131
2nd Cut silage	24.6	62	9.8	130
Young grass nurse crop	19.0	56	8.9	106
Hay	76.6	57	8.5	48

GRASS FORAGE - PHYSICAL DATA

a. Seeds mixture cost £63
extra fertiliser for establishment £15

b. Fertiliser	Sheep Grazing	Cattle Systems	2 cut Silage	Hay
N	220	250	260	200
P ₂ O ₅	50	42	45	60
K ₂ O	50	72	65	60

Slurry was also applied to 2 cut silage ground

- c. Sprays Apportioned as a proportion of total sprays on rotation grass swards
- d. Lime Apportioned as a proportion of total lime used on ploughable land
- e. Other Expenses silage bags
silage clamp sheeting
twins for baling
silage additive

A. VARIABLE COSTS FOR SHEEP FORAGE

	Grazing	Silage	Hay	Rape
Fertilizer kg/ha (N)	220	250	200	110
<u>Variable Costs</u>	£	£	£	£
Seeds (annual charge)	13	13	13	14
Fertiliser	100	112	88	54
Sprays	6	6	6	8
Lime	6	6	6	6
Others (sheeting, twine)	-	5	3	-
	125	142	116	82

B. VARIABLE COSTS FOR CATTLE SYSTEMS FORAGE

	Grazing and Silage
Fertiliser kg/ha (N)	250
<u>Variable Costs</u>	£
Seeds (annual charge)	13
Fertiliser	112
Sprays	6
Lime	6
Others (additive, sheeting)	5
	142

Two thirds of the cattle grazed on Hartwood during 1988 were used on the upland systems experiment. They were stocked at an average of 10 cows on 5.5 ha, at a flat rate for the whole season, but grass surplus to grazing requirements was closed off by electric fencing and used for silage production.

c. Woodland

A field near Shotts, which was of only limited use to the station due to the effect of trespass, was planted out as an amenity woodland of mainly hard woods. This was carried out with the help of The Central Scotland Countryside Trust. The trees have established well and there has only been a limited level of vandalism.

d. Forage

Eight hectares of rape (Hobson) were sown in mid July, and provided keep for 260 lambs from mid October until early December.

6. MAINTENANCEa. Buildings

The cattle shed brickwork was cleaned, chipped and repointed before being painted. Considerable work was required on Newmill Cottage; this was done under the supervision of DAFS. The work included a damp course, new windows and full cement rendering of the external walls. The downstairs part of the farm house was rewired and a shower was fitted in the bathroom. Emergency lighting was installed in the labs to allow operation of ovens and other equipment in the event of a power cut. The floor in the sheep shed was concreted to bring it up to the level of the new sheep shed and to make the facility more manageable. Two of the plastic sheds lost their covers. One was demolished and the other was resheeted.

b. Roads

Some roads were scalped with some bottoming being required. This is an ongoing process with constant work being required.

c. Fencing

About 1500 metres of fencing were replaced during the year at Minefield, round tree planting at Shotts and roadside fence at Newmill Cottage, and there was also considerable repair work near to main roads following cars leaving the road.

7. STAFFING

G.K.D. Corsar BSc MS	Officer in Charge
R.A. Hetherington BSc (Agr)	Cattle Manager and Deputy OIC
Sandra Denham	Administrative Assistant
I. Bousted	Grieve from Nov 1988
H. Habblett	Head Shepherd
R. Graham	Head Stocksman - cattle

N. Macaulay	Tractor Foreman
D.B. Fleming	Stockworker - general
J. MacDonald	Stockworker - sheep
H.W.M. Habblett	Stockworker - sheep
D.A. Henderson	General Worker
P. Leonard	Stockworker - cattle
Lillian Thomson	Cleaner
Betty Farley	Cleaner from Aug 1988
D. Thomson	retired as Grieve Sept 1988
Annie Thomson	retired as cleaner Aug 1988

8. EQUIPMENT (PURCHASES AND SALES)

A new Claas forage harvester was purchased to replace a machine bought in 1981. An Amozone fertiliser spinner was bought to assist in more timely applications and a greater degree of accuracy. A second hand slurry tanker to empty the slurry store at the end of the cattle metabolism shed has been purchased. A second hand 3 furrow plough has also been bought.

A 1970 John Deere tractor and a one tonne rear mounted forklift were sold.

APPENDIX IHartwood Sheep Reconciliation 1/12/87 to 30/11/88

	Ewes		Lambs	
	GF	BF	Suffolk	BF
1/12/87	767	212	414	102
Gimmers bought	258	-	-	-
Lambs at marketing	-	-	1029	216
From Glensaugh	-	-	484	-
Sold at market	104	63	1614	305
To Moredun	8	-	-	-
Deaths	65	15	49	11
30/11/88	844	134	264	2

APPENDIX IIReconciliation of Cattle Numbers Run on Hartwood 1/12/87 to 30/11/88

	Adult	Bulls	Calves & Stirks	Totals
At 1/12/87	186	6	70	262
Births	-	-	189	189
Purchases	-	1	43	44
From House o' Muir	38	4	9	51
From Glensaugh	63	-	-	63
From Sourhope	21	-	-	21
To Sourhope	6	-	-	6
To Glensaugh	47	-	-	47
To House o' Muir	10	4	1	15
Deaths	6	-	13	19
Sales	51	1	196	248
Other Losses	-	-	3 *	3
At 30/11/88	188	6	98	292

*one fistulated/one put down by vet/one rustled.

NB: This reconciliation deals only with cattle actually at Hartwood, and does not therefore include stock at House o' Muir or elsewhere at 1/12/87 or 30/11/88 belonging to Hartwood.

GLENSAUGH FARMProduction Year November '87 - October '881. WEATHER

A generally mild winter with little or no snow cover even on the highest ground was followed by a relatively early spring. A very dry May and June was followed by a wet July and August. The autumn conditions continued very mild with heavy rainstorms in October.

Rainfall (mm) taken at Fettercairn

1987 November	-	61.5
December	-	68.0

1988 January	-	138.0
February	-	65.0
March	-	84.0
April	-	71.0
May	-	59.0
June	-	14.0
July	-	111.0
August	-	150.0
September	-	82.0
October	-	178.0
TOTAL		1081.0

50 Year mean	937 mm
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Good autumn grass production was followed by an early onset to grazing in late April which substantially reduced the winter feeding period of all livestock.

2. SHEEP PRODUCTIONa. Mating 1987

The hill stocks of Blackface ewes were mated in good condition without receiving supplements at grass. The cross bred ewe stocks were mated on the inbye reseeds and silage fields and

supplementary feeding began in early November once herbage height had fallen to 3.5 cm. Feeding of sugar beet pulp nuts continued throughout the mating period with hay on offer.

b. Winter Feeding 1987/88

The Blackface ewes continued to graze the heather hill throughout the winter. Feeding commenced at 200 g/head/day in mid January with hay on offer during storm conditions. Single bearing ewes received up to 450 g prior to lambing on the hill reseeds. Twin bearing ewes were separated and brought off the hill reseeds close to the steading. Feeding levels were increased to 700 g/head/day plus hay ad lib prior to lambing. Thereafter the ewes were returned to the hill reseeds and feeding stopped once grass reached 3.5 cm in early May. The crossbred ewestocks began receiving sugar beet pulp nuts during tupping and continued supplementation at 250-400 g/head/day throughout mid pregnancy. After scanning, single bearing ewes were wintered on an ad lib big bale silage and the twin bearing ewes were put onto silage and 450 g of compound feed. Single bearing ewes lambed outside and continued to receive silage and 250 g/head of cake until grass growth commenced. The twin bearing ewes were fed on hay (0.8 kg/head/day) and up to 850 g of compound feed during lambing with feeding continuing at this level until grazing commenced. Roughage in the form of hay and silage was available during early lactation and was continued until intakes became negligible in early May.

The Blackface stock ewe hogs were wintered at the Station, outside, on sugar beet pulp and dried grass pellets, hay and silage. These were on offer from early January to mid April; however, the mild winter weather allowed hogs to graze extensively on the open hill and attempts to get them to feed satisfactorily were not very successful. The winter performance of these hogs was disappointing and full opportunity was given during the grazing season for some compensatory growth to occur.

Table 1 summarises Winter Feed Costs 1987/88

Table 1. Winter Feeding of sheep 1987-88

FLOCK	HAY			CONCENTRATES			TOTAL COST
	DATES FED	AMOUNT kg	COST	DATES FED	AMOUNT kg	COST	
Cairn	8/2-9/5	29.1	1.89	5/1-20/5	45.6	5.76	7.65
Birnie	8/2-15/4	26.8	1.74	5/1-20/5	45.7	5.77	7.51
Finella	2/12-4/5	38.7	2.52	30/10-20/5	78.5	9.64	12.41*
	(Silage)	300	6.00				6.00
Tree GF	27/11-6/5	41.3	2.69	23/11-20/5	62.5	7.75	10.69*
	(Silage)	294	5.80				5.80
Hoggs	6/1-13/4	54.1	3.52	6/1-13/4	34.0	4.14	7.65
	(Silage)	38	0.76				0.76

*Includes 25p minerals

NB: Silage costed @ £20/ton

Hay costed @ £65/ton

Concentrates costed @ £126/ton

Sugar beet pulp nuts costed @ £110/ton

c. Lambing

Table 2 summarises lamb mortality data over all flocks.

TABLE 2 Lamb Mortality 1988

Flock	Ewe Breed	Total Lambs				Born Deaths Died			Total			
		Born	Born Still Alive	Still BornMarked	Lambs Marked	Born Alive	Lambs Weaned to Mark	Mark to Wean	Since Born Alive	%	Lambs Deaths	%
Cairn	BF	367	336	31	313	23	298	15	38	11.3	69	18.8
Birnie	BF	277	268	9	253	15	243	10	25	9.3	34	12.3
Finella	EFxBF	138	132	6	126	6	125	1	7	5.3	13	9.4
	SHETx	140	137	3	135	2	132	3	5	3.6	8	5.7
	HB	167	159	8	148	11	147	1	12	7.5	20	12.0
	GF	182	178	4	167	11	163	4	15	8.4	19	10.4
AGRO-F	GF	577	555	22	521	34	509	12	46	8.3	68	11.8
TOTAL		1848	1765	83	1663	102	1617	46	148	8.4	231	12.5

Overall, 8.4% of live lambs born, died before weaning. This figure represents a further improvement on 1986/87 figures of 9.2% over a significantly greater number of lambs produced, 1765 as against 1406 (20%).

Table 3 shows that significant increases in performance levels were achieved with the hill ewes, whereas targets for the upland flocks of crossbred ewes were generally not reached. However overall a significant improvement in the farms overall weaning percentage was achieved. This improvement has now been sustained over the past 4 years.

1985 - 102% lambs weaned overall
 1986 - 105% lambs weaned overall
 1987 - 114% lambs weaned overall
 1988 - 129% lambs weaned overall

TABLE 3 Weaning Percentages and Lamb Liveweights 1988

Flock	Ewe Breed	Ewes to Tup	Lambs Weaned			Weaning Weights	
			1988		1987	Singles	Twins
			No.	%	%		
Cairn	BF	258	298	115.5	99.2	30.3	25.1
Birnie	BF	204	243	119.1	99.0	28.9	23.6
Finella	EFxBF	84	125	148.8	159.7	37.0	31.1
	SHETx	113	132	116.8	116.5	27.5	24.5
	HB	118	147	124.6	141.1	32.9	28.8
	GF	111	163	146.8	144.0	35.0	30.3
AGRO-F	GF	364	509	139.8	-	34.5	28.1
TOTALS		1252	1617	129.2	114.3		

The level of improvement can be largely attributed to the increase in the stockcarry of the crossbred ewes at the expense of Cheviot and Blackface ewes, and two successive mild winters followed by good weather in April. The influence of the weather at and around lambing has a most important effect on lamb survival at Glensaugh.

d. Lamb Sales

Suffolk cross lambs were sold at Aberdeen, Laurencekirk and Edzell store lamb sales from mid August-mid October. Lambs were initially batched by weight and sold in pens of up to 100 at over 35 kg liveweight. Four hundred and eighty four (484) smaller lambs were sold to Hartwood

in late August at £32/head. The remaining six hundred and twenty (620) lambs sold store at up to £38.20 to average £34.07 nett of expenses.

The Blackface lambs were sold through Angus Marts at Edzell from 3 September-15 October. In addition 112 wether lambs were supplied to Animals and Grazing Ecology Division at weaning in late August, these averaged £24.30/hd at £1.00/kg liveweight. Blackface wether and spare ewe lambs sold to a top of £30.40/hd to average £21.80 nett of expenses.

Overall 1447 lambs sold at £43,846 nett to average £30.30/hd. This compares with 1987 sales of 1049 lambs at £33,592 nett to average £32.00/hd.

Stock ewe lambs:- All crossbred ewe stocks are replaced by bought in gimmers. The 450 Blackface ewes are self contained and for 1988, 146 ewe lambs were retained for future breeding. These lambs were away wintered on rented grazings for 1988/89.

e. Cast Ewe Sales

In 1988 the two main periods for the sale of cast ewes were after the September gathers and after scanning in February. The autumn cast ewe sales were well down on the preceding years level of prices. The crossbred (Greyface x Halfbred) ewes sold to £38.50/hd for broken mouthed correct below sheep with feeding ewes making up to £25.25/hd. Cast Blackface ewes were a disappointing trade selling to £18.70 to average £17.80. In February fat ewes sold to £38.70 for Greyface and £26.50 for Blackfaces. In total 31 ewes were sold after scanning.

f. Wool Sales

The weight of wool graded in 1988 was 4251 kg which realised £3916.19. In addition a storage premium of £130.27 was received. The average price per Kilo realised was 95.18p compared to 92.49p in 1987.

g. Sheep Purchases

All ex Aberdeen

Shetland x Cheviot Gimmers	56	-	Average	£73.42
Halfbred Gimmers	30	-	Average	£90.00
Greyface	132	-	Average	£85.00

60.

Blackface Rams - ex Perth
Shearlings 4 - Average £327.00

Suffolk Rams - ex Aberdeen
Shearlings, 2 and 3 Shear 12 - Average £146.00

h. Mating 1988

The mating groups for autumn 1988 were as follows:-

Early crossbred ewes - All to Suffolk tups to begin lambing from March 25th onwards.

108 Greyfaces
118 Halfbreds
105 East Friesland x Blackface ewes
144 Shetland x Cheviot ewes

Agroforestry Greyfaces:- All to Suffolk tups to begin lambing 10th April onwards - 386 ewes.

Hill ewes:- All to Blackface tups lambing 20th April onwards.

Cairn 254 Blackface ewes
Birnie 206 Blackface ewes

In total 1303 ewes were put to the ram with 146 Blackface ewe hoggs retained and outwintered on rented grazings.

Grass growth continued well into December with no supplementary feed being required for the hill ewes. The crossbred ewe stocks began receiving sugar beet pulp nuts at pasture once herbage height declined to 3.5 cm. 450 g/hd/day were then fed throughout the mating period and continued for 3 weeks after the tups were removed at New Year.

Table 4 gives the Liveweight of Sheep at Mating for November 1987 and November 1988 and Table 5 the Reconciliation of Ewe Numbers for 1987/88.

TABLE 4 Liveweight of Sheep 1987/88

Flock	Breed	Ewes		Gimmers		Hoggs	
		1987	1988	1987	1988	1987	1988
Cairn	BF	57.1	56.0	48.5	48.2	35.6	33.1
Birnie	BF	55.4	51.8	46.0	44.1	39.0	32.5
Finella	EF/BF	56.6	56.6	50.4	58.3	36.0	-
	SHETx	49.3	54.7	46.7	46.8	-	-
	HB	72.7	77.1	75.6	74.3	-	-
	GF	68.5	66.6	64.5	70.6	-	-
TREE	GF	78.7	75.3	62.0	67.0	-	-

TABLE 5 Reconciliation of Ewe Numbers 1987/88

Flock	Breed	Ewes & Gimmers Nov '87	Cast and Cull	Deaths		Gimmers		Ewes & Gimmers Nov '88	Hoggs kept Nov '88
				No	%	Home Bred	Others		
Cairn	BF	258	41	14	5.4	51	-	254	79
Birnie	BF	204	30	14	6.9	46	-	206	67
Finella	EF/BF	84	8	7	8.3	36	-	105	-
	SHETx	113	16	11	9.7	-	58	144	-
	HB	118	22	8	6.8	-	30	118	-
	GF	111	26	9	8.1	-	32	108	-
TREE	GF	364	58	38	10.4	-	100	368	-
OTHERS	Crossbreeds							22	
	BF							38	
TOTALS		1252	201	101		133	220	1363	146

i. Sheep Veterinary Health Programme

JANUARY

FEBRUARY

MARCH

APRIL

Heptovac P boost for
all ewes and gimmersHeptovac P boost for
hoggs and tups

Deworm all stock prelamb

MAY

JUNE

JULY

AUGUST

Deworm all ewes
and lambsDeworm twin lambs
every 3-4 weeksDeworm twin ewes
every 6-8 weeks
till weanMid August
deworm all lambsdeworm single lambs
DIP ALL SHEEP

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

Deworm weaned
lambs

All deworm

All purchased sheep Enzootic and
defluke, deworm, abortion vaccine
and Heptovac P and cobalt bullet

Blackface hoggs Heptovac P,
cobalt and Louping ill

DIP ALL SHEEP

2. BEEF CATTLE PRODUCTION

The Suckler Cow Herd at Glensaugh usually numbers some 55 Blue Greys. These are outwintered, spring calving cows mated to Charolais bulls. In addition to these cows during 1987 and 1988 some 40-50 Blue Grey Heifers mated to Aberdeen Angus and Limousin bulls have also been outwintered at Glensaugh, calving down in the spring of the year. The cows form part of the gene pool for reproductive studies carried out at Hartwood. They are managed as commercially as experimental constraints allow and particularly during the grazing season utilise the unimproved areas of the farm (Cairn and Finella Hills) in addition to their beneficial role in controlling surplus grass on the sheep grazings. The herds' winter diet is based on straw, arable and grass silage and minimum use of concentrate feeds. Magnesium cobs are fed during the high risk periods of spring and autumn.

The calves are weaned into straw bedded cattle courts in October and wintered on grass silage, distillers dark grains and sugar beet or barley.

a. Winter Feeding - 1987/88

The aim is to have cows in November/December at condition score 3-3.5 and have them calve down at condition score 2-2.5 in March/April. They range in liveweight from 450-550 kg.

Barley straw is the only roughage fed from weaning in October until early January. In addition the cows have access to the rough

hill grazings. Arable silage (whole crop barley) is fed ad lib, plus minerals from January to March and replaced with big bale grass silage to appetite. This is fed until the end of May or as long as stocks last. High Magnesium cattle cobs are fed from mid-April to late-May and during late-September and October at a rate of 1.0 to 2.0 kg/hd. Lactating cows may receive distillers dark grains or barley in early lactation depending upon silage quality. Feeding management is geared to maximising the value of high roughage diets during both winter and summer periods.

Feed Consumption 1987/88 per Cow

Grass and Arable Silage	-	3.5 tonnes
Barley Straw	-	1.0 tonnes
High Magnesium Cobs	-	120 kg
Distillers Dark Grain	-	40 kg
Minerals	-	36 kg

TABLE 1 Calving Performance. Period Calving 6 March - 15 May 1988

	Charolaise Sire		Limousin/AA Sire	
	(12) Male	(11) Female	(13) Male	(18) Female
Birth wg (kg)	45.5	45.9	40.8	36.0
Weaning wt (kg)	275.8	268.6	218.0	203.9

TABLE 2 Average Daily Liveweight Gain (Birth-Weaning: Av 246 Days)

	Males	Females
Charolais	0.94 kg/day	0.90 kg/day
AA/Limousin	0.72 kg/day	0.68 kg/day

Calf Mortality - 5 deaths

3 Heifers lost calves	-	2 stillborn
	-	1 exposure
2 cows lost calves	-	Dystokia. Calves D.O.A.

b. Suckled Calves

These are housed at weaning and put onto ad lib first cut grass silage (with added sugar beet pulp shreds acting as an effluent absorbent and extra energy source). Feeding levels are adjusted throughout the winter feeding period to produce 0.6-0.7 kg/day liveweight gain, which is generally achieved from late January onwards. These stores are either sold in April or retained for grazing experiments.

c. Cattle Sales 1988/89TABLE 3 Cast Cows

	Lwt kg	Price £	p/kg
15/2/88 1 x Blue Grey	600	474	79
21/3/88 1 x Blue Grey	555	443	79.8
5/4/88 1 x In Calf Store Heifer		371	
20/1/89 3 x Blue Grey Cows	505	402	79.8
9/2/89 1 x Blue Grey Casualty		150	

TABLE 4 Store Cattle Sales

9 April 1988 -

20 Charolais Stots

Av 419 kg - £570.65 = 1.36p/kg
range 362-476 kg Lwt and £1.25-£1.49/kg

30 Charolais Heifers

Av 386 kg - £491 = 1.27p/kg
range 343-500 kg and £1.23-1.29p/kg

11 Simmental cross purchased heifers

Av 377 kg - £484 = 1.28p/kg
range 340-420 kg and £1.19-£1.32p/kg

d. Cattle Purchases

30 May 1988 -

50 Blue Grey Bulling Heifers run with Limousin bull on rented summer grazing at £570/hd.

26 October 1988 -

17 Charolais cross store heifers av 278 kg at £367 = £1.32/kg.

e. Veterinary Preventative Medicine Programme

March	- Calves - treat navels with Iodine at birth castrate using rubber rings
May/June	- Calves - De horn 2 cc Copper
July	- Cows and Calves - IVOMEK
September/October/ November (2 weeks after housing)	- Calves - RISPOVOL VACCINE - IBR VACCINE - IVOMEK

- November - Cows - Fluke Drench
Mastitis check
- January/February - Calving Cows and Heifers
- ROTAVEC K99

3. LAND USE

a. Reseeding

Met Fields	6.25 ha
Drive 2	3.15 ha

Spring - Whole Crop Barley - taken as silage undersown with Ryegrass, Timothy, White Clover mixture as detailed in 1987 Farm Report.

Reseeded areas are subsoiled and receive approximately 30 tons farm yard manure per ha before ploughing.

Autumn - Hologlen 3.2 ha after a second cut of silage this field received farm yard manure and was ploughed out then direct sown to Ryegrass, Timothy and White Clover.

b. Conservation

Mets 1 and 2	Whole Crop Barley Silage
Drive 2	(9.4 ha)

Laundry	
Drive 1	
Lower Cottar	
Tup Park	1st cut silage
Woodsides	(32 ha)
Bowes	
Upper Bowes	
Hologlen	

Laundry	
Drive 1	
Lower Cottar	2nd cut silage
Tup Park	(23 ha)
Woodsides	
Holeglen	

In total some 1000 big bales (bagged and wrapped) were produced for first and second cut. Pit silage was mixed with 40 kg sugar beet pulp shreds per tonne to absorb the effluent. The second cut material received an additive of sulphuric acid during ensiling.

d. Woodland

Twenty hectares of improved hill grazings were planted with 3 species of trees at wide spacings in April 1988, at the beginning of a long term Agroforestry experiment. Amenity planting at Loch Saugh, in Glad Hills, alongside the public roadway, and in Upper Cottar, were beaten up and received herbicide treatment.

Stands of mature timber around the farm were tidied up and dead and dangerous trees were felled and removed. Conifers were planted to infill open areas below mature trees around the farm steading.

e. Maintenance

The farm roadways received their annual upgrading with quarry stone carted from our own source by Loch Saugh. Extensive fencing works around the station to allow Agroforestry and sheep grazing experiments to get underway were completed in early summer. The exteriors of four farm cottages were painted and modifications to sheep housing between the hogg shed and sheep house was completed by lambing time.

4. EQUIPMENT SALES AND PURCHASES

Sales

Second-hand Farmhand Round Baller 5'	£4500
--------------------------------------	-------

Purchases

1 New John Deere 4' Round Baler £9750

5. STAFF

D. L. Nelson

OIC

Sheep ProgrammeBeef/General FarmOffice Cleaning

A. J. Senior

J. Black Snr (Grieve)

Mrs J. Black

N. McEwan

J. Black Jnr

D. Davidson

K. Adams

HOUSE O' MUIR FARM1. WEATHER

Conditions for tugging during November and December 1987 were quite good in that there was less rain than is usual. In general January to March was milder than usual with little snow. It was cold for the 'inbye' lambing, but the first two weeks of the hill lambing were warm. There was enough dry weather to make good silage before heavy continuous rain in mid-summer and one week of warm weather thereafter allowed good haymaking. Late summer and autumn pasture growth was good as a consequence of warm temperatures and adequate even rainfall.

	<u>Rainfall (mm)</u>	
	Glencorse Reservoir	Bush House
1987 November	55.0	43.4
December	83.9	76.0
1988 January	107.5	105.1
February	61.2	57.5
March	79.3	75.6
April	67.4	64.5
May	63.9	55.7
June	18.7	18.1
July	164.9	165.9
August	93.7	83.6
September	96.4	90.9
October	92.0	77.3
TOTAL	983.9	913.6

2. SHEEP PRODUCTIONa. Mating 1987

Five hundred and seventy five ewes were mated in total. One hundred and twenty three of these were run inbye as usual, of these 70 were put to East Friesland rams and 53 to the Border Leicester on 1st November. The 452 hill ewes were mated in fields with

Blackface rams from 20th November onwards and returned to the hill after 21 days.

b. Winter feeding 1987/88

Inbye Blackface ewes were fed hay as required from 1st February to 3rd May. Hill ewes with twins (based on scanning) were fed hay from 4th March to 3rd May; those with singles were fed hay from 14th March to 30th April. The total amount fed was 10 tonnes; this is an average of 17 kg/ewe and was less than is usual which reflected the mild winter. The concentrate fed was 'Ewebol' (14% crude protein).

TABLE 1 Winter feed for sheep 1987-88

Flock	Hay Dates fed	Amount/Ewe/day	Cost/Ewe*	Concentrates		Total Cost/Ewe
				Dates fed	Amount/Ewe/day	
Inbye BF - Singles	1 Feb-3 May	.31 kg	£0.84	25 Feb-28 May	.25 kg	£3.84
- Twins	1 Feb-3 May	.31 kg	£0.84	25 Feb-28 May	.25 kg	£3.84
Hill BF - Singles	14 Mar-30 Apr	.19 kg	£0.32	14 Mar-1 May	.25 kg	£1.70
- Twins	4 Mar-3 May	.38 kg	£0.74	4 Mar-28 May	.25 kg	£3.29

*Home-made hay costed at £30/tonne. Excluding hay fed to tups and hogs.

c. Lambing

The good weather during the first half of lambing was an advantage; the overall result was quite good.

TABLE 2 Lamb mortality 1988

Flock	Lambs born			Deaths		Total	% of total	% of live births
	Total	Stillborn	Alive	Birth-Marking	Marking-Weaning			
Hill Blackface	626	15	611	15	6	36	5.8	5.9
Inbye Blackface	159	8	151	3	9	20	12.6	13.2
OVERALL	785	23	762	18	15	56	7.1	7.3

TABLE 3 Weaning percentages 1988

Ewes to ram 1987	Lambs weaned 1988		Lambs weaned 1987	
	No	No %	No	%
Hill	452	590 131	129	
Inbye	123	139 113	115	
TOTAL	575	729 127	124	

The relatively low weaning % in 'inbye' Blackface crossed ewes again reflects the occurrence of 'Swayback' in lambs on the experiment in the 'Market Park'. The hill'Blackface ewes again performed well in terms of lamb quality as well as producing a high percentage of lambs at weaning.

d. Lamb disposal

Almost all pure-bred Blackface and cross lambs were sold as stores at Lanark as is customary. The top draw wedder lambs again made third top price of £32.80 at the principal sale; this represented a fall of £1.80/head from 1987. The average price for wedder lambs sold store was £28.60 per head. This was less than in 1987 but the decline was less than that of the 'trade' in general. First and second draw ewe lambs sold for £45.50 and £38.00 per

head respectively. This represents a rise of £10 and £9 over 1987 prices for the two lots and is thought to reflect the type of rams introduced into the flock in 1987.

Lanark store sale details

	Blackface		Cross	
	No	Price	No	Price
Wedders	269	£28.60	61	£30.80
Ewes	164	£33.53	29	£31.67

A total of 50 other pure-bred and cross lambs were sold at Gorgie; these included cast ram lambs, odd wedder and ewe lambs, and 7 finished lambs. The average price for these was £19.40.

e. Stock ewe lambs

One hundred and thirty Blackfaces were retained as stock replacements for the hill flock. These were wintered away from 28th September 1987 to 5th March 1988; they were then trained to concentrate feeding from boxes for one month before being hefted on to the hill. Away wintering cost £4/head and the supplementary feed cost £3/head.

Twenty five East Friesland x Blackface ewe lambs were retained for subsequent transfer to Glensaugh for experimental purposes.

f. Cast ewe sales

Fifty two ewes were sold at Gorgie for £23.55 per head. Sixty eight draft (1984 age) ewes were transferred to Hartwood for continuation of a long-term experiment (RO 042086). Fifty draft ewes were purchased at Lanark to maintain stock numbers on the farm.

g. Wool

The clip sold for £2534. This figure includes a small amount for experimental ewes housed at Bush.

h. Mating 1988

Five hundred and eighty seven ewes were mated in the autumn of 1988; these comprised 459 hill ewes and 130 'inbye'. Tup breed and tugging dates were as for 1987.

i. Veterinary preventative medicine

All ewes are injected against clostridial disease 6 weeks before lambing with Heptavac 'P'. Ewe hogg replacements are injected with Heptavac 'P' in October then 6 weeks later in December. All sheep are dipped as is mandatory against 'Scab' with 'Extramort' in July and at the end of September. Inbye ewes and lambs are dosed against worms with 'Panacur' every three weeks from June to early August. Ewes and twin lambs reared inbye, but which are not in the experiment in Market Park, are given 'copper' needles in June as a precaution against 'hypocuprosis'.

There has been the limited usual occurrence of Johnes disease - 7 having died. There has also been inevitably some loss on poor performance in a small number of lambs in the control half of the flock engaged in the copper deficiency experiment in Market Park.

There was a slight problem due to eye disease in calves but this responded well to treatment with Penicillin. Calves were dosed 8 weeks after turn-out with 'Systamex', and again in August before transferring to aftermaths. In general this preventative programme was successful in maintaining healthy animals.

3. BEEF CATTLE PRODUCTION

a. Policy A main function of the cattle unit was to winter 29 autumn-and-spring-calving Blue Grey and Hereford x Friesian heifers purchased by Hartwood Farm for subsequent use there. They arrived in September and, after calving and re-bulling, were returned to Hartwood in late May. Calves were retained; the 23 best ones for sale as stores in autumn, the remainder were retained for fattening over winter. In addition 9 Blue Grey heifers from Glensaugh were wintered from January onwards; being transferred with calves at foot to Sourhope for grazing studies in late May. Seven Luing cows which had calved in August and September 1987 were used, as usual, after bulling (for convenience

with Hartwood heifers) and weaning for summer grazing studies on off-farm indigenous communities (042057). Their calves were retained with those from Hartwood stock; the cows calved again in September 1988.

TABLE 1 Reconciliation of ewe numbers

Ewes and Gimmers Nov 1987	Cast	Sold	Deaths or Missing	Bought	Gimmers in	Ewes and Gimmers Nov 1988
575	58	68	22	50	110	587

TABLE 2 Reconciliation of cattle numbers

	1 Dec 1987	Born	Bought	Deaths	Sold	Age Transfers	1st Dec 1988
Autumn calvers	7	-	1	-	-	-	8
Stirks	10	-	-	-	10	12	12
Suckling cows	7	7	32 +	1	23	12	10

+29 born to Hartwood autumn- and spring- calving heifers wintered at House o' Muir.

In addition 23 non-pregnant experimental cattle (for occasional use in grazing experiments or for provision of serum) were maintained for most of the years indoors or at pasture as appropriate.

Twelve bullocks and heifers were retained for indoor finishing over winter; this was the limit set by research requirements for in housing and labour.

b. Winter feeding

Heifers were fed silage ad lib with 1 kg/head of 'high Magnesium' concentrate cobs (12% C.P.) as necessary depending on condition. Similarly concentrate feed cobs usually only started (about 1 kg/head) about 2 weeks after calving (unless they were in poor condition) to minimise calf scour. Feed was increased to

1 kg/head/day about 6 weeks after calving. Calves were introduced to 'creep fed' concentrate and hay at about 6 weeks of age.

Sixteen dry experimental cows (and 7 Luings after early calf-weaning) were outwintered on ad lib silage and straw.

Fattening bullocks and heifers - ad lib silage with 1 kg barley and 1 kg potatoes per head per day.

Fistulated cattle - u 5 kg mixed home-milled complete diet based on straw, barley and molasses with minerals.

c. Calving performance and calf growth

Twenty nine Hartwood heifers and 7 Luing cows calved with no losses. One heifer stirk died later of pneumonia. No calves were on experiment and no liveweights are available, but the high prices for calves sold in autumn is indicative of good performance, particularly for calves from the Luing cows.

d. Replacement policy is dependent on the requirements to winter heifers for the Hartwood herd and the need to provide stock for manipulation of sward state on hill pasture investigations. The Luing cows will be replaced if the research requirement continues beyond their useful lifespan.

e. Cattle sales

The animals sold as weaned calves, forward stores or finished cattle are of mixed breeds out of Blue Grey or Hereford x Friesian cows, mostly sired by Charolais, Simmental or Limousin bulls. This is an inevitable consequence of purchasing in-calf heifers.

Details of cattle sold:

		No	Price/head (£)
Store:	Bullocks	13	426.77
	Heifers	10	340.70
Fat:	Bullocks	7	510.00
	Heifers	3	467.27

4. GOATS

There is no well-defined policy; the farm's role has been to provide accommodation, feed and labour for Institute and CBL goats as the research programme develops and changes. Animals have been housed in goat pens and occasionally in cattle or sheep pens; none have grazed outside. Details of housing periods and feed levels for the major groups were as follows:

1. Fifty two aged domestic females on experiment (RO 042106) were housed from early June to the year end and fed ad lib hay and 1 kg concentrates (17% C.P.)/head/day.
2. Seventy four Institute and CBL recipient females were fed 1/2 kg hay and 1 kg complete diet/head/day from 26th September for six weeks. Thereafter 81 similar animals were fed ad lib hay and concentrate (1 kg/head/day for pregnant and 1/2 kg/head/day for others) to the year end.
3. Fifty eight Sourhope goats for embryo transplant (RO 042105) were housed and fed to experimental requirements.
4. In addition about 50 goats of differing types were housed and fed for varying periods between January and May to ease congestion at Bush.

In addition to routine help with experimental work on the farm, staff have attended to some tasks at Bush. The major ones being emptying the sheephouse slurry tanks and spreading slurry, spreading fertiliser on Bush fields, dung carting and sheep shearing

and dipping. Occasional help has also been given at Cleish with gathering, dipping and shearing sheep.

5. LAND USE

- a. No reseeding was carried out.
- b. Conservation. Eleven acres of grass at Bush and House o' Muir was made into good hay. First-cut and second-cut silage was taken from 20 acres at Bush and House o' Muir; the total amount made being about 350-400 tons, also of good quality.
- c. Woodland management. Lothian Region planted two areas with deciduous trees on House o' Muir hill face above the Knowes reseed as part of a conservation project, and about 0.10 ha for shelter at the northern corner of Turnhouse Field.

6. MAINTENANCE

Major repairs costing £6000 were completed to the stonework of the main steading and the cattle metabolism unit.

Cattle pens and handling units were upgraded to facilitate safer and quicker cattle and goat handling, and extra metal posts and gates were being installed between the steading and the cattle shed.

About 200 metres of fencing was repaired by farm staff and Lothian Region replaced fencing and gates for the public adjacent to the burn at the bottom of Daisy Dell.

7. STAFFING

R.H. Armstrong	SSO
R. Smith	Manager/shepherd
J. Smith	Stockman/tractorman
Mrs I Smith	Cleaner

8. EQUIPMENT PURCHASES OR SALES

No major purchases or sales of equipment were made.

RED DEER FARM

1. WEATHER

In October 1987, the production year started with very mild but wet weather with November and December similar but with more sunshine, an excellent autumn for the deerstocks. The winter months were mostly mild and sunny, snow fell in February when temperatures fell for a short spell. The spring was mixed with some cold east winds but June was dry, sunny and warm. There was a sudden change in July, to cold, wet and windy weather with torrential rainstorms which lasted until the end of August. September was better, drier and warm but October was extremely wet with severe gales and flooding. Snow fell at the end of the month and again in November but was mostly mild and wet.

2. DEERSTOCKS

(a) The rut of 1987

The weather, although very wet, remained mild throughout October and November. Sunny spells with slight frosts made conditions ideal for the rut - the stags were introduced to the hind groups as shown in Table 1.

TABLE 1 Stag release dates 1987

1. Pere David bulls to Pere David hinds - June-September
2. Wapiti bulls to red hinds - 23rd September
3. Wapiti bulls to hybrid hinds - 23rd September
4. Wapiti F1 hybrid stags to red hinds - 1st October
5. Red stags to hill group red hinds - 1st October
6. Red stags to Upper Farm red hinds on the reseeds - 1st October
7. Red stags to Lochhills red hinds - 13th October
8. Inseminations of red hinds with Pere David semen
- 24th September

All stags were withdrawn during the first week of December.

(b) Winter and spring supplementary feeding

All adult hinds and stags were allocated to the hill wintering areas

during the first week in December. Supplementary feeding began immediately - the amounts fed and the costs are given in Table 2.

The mild open winter reduced the amounts of supplement fed and thereby the wintering costs compared with the previous year.

(c) Hind liveweights

The liveweights of the breeding hinds were largely maintained over winter at their September levels. Some of the younger hinds actually increased their liveweights during the winter. All the hinds came to the calving in excellent condition. The liveweights of all the cohorts are given in Table 3.

TABLE 2 Winter feeding levels and costs for all adult stock

Groups	Period fed	Hay kg/hd	Cost/ha £	Concentrated kg/hd	Cost/hd £	Total /hd £
Birnie (109)	10/12/87 05/05/88	42	3.57	8	1.12	4.69
Upper Farm (95)	10/12/87 10/05/88	60	5.10	41	5.74	10.84
Greenshiels (Stags)(16)	11/12/87 10/05/88	70	5.95	95	13.30	19.25
Yearlings (31)	04/12/87 09/05/88	145	12.32	88	12.32	24.64
Cairn Henney (55)	04/12/87 21/04/88	201	17.08	10	1.40	18.48
Pere David (13)	04/12/87 02/05/88	405	34.42	0	0.00	34.42
Wapiti bulls (2)	01/12/87 03/05/88	750	63.75	385	53.90	117.65
(NERC) hinds (31)	27/02/88 20/04/88	50	4.25	14	1.96	6.21
Housed hinds (17) (Inseminated)	28/10/87 04/05/88	190	16.15	95	13.30	29.45
Yearlings for slaughter* (201)	04/12/87 25/02/88	5290	(£450)	3360	(£470)	4.57

*Animals were taken away each week to be slaughtered, therefore the number of animals in this group was declining over the period fed.

The figures given in this line refer to the whole group not on a per head basis.

Since 201 deer were sold for slaughter this represents a cost of £4.57 per head.

NB: BOCM concentrate 15% CP at £140 per tonne.
Hay at £85 per tonne.

TABLE 3 Liveweights of breeding hinds (Nos in brackets)

Cohort	Liveweight Sept 1987		Liveweight March 1988		Liveweight Sept 1988	
	kg		kg		kg	
A	87.5	(2)	87.0	(2)	84.0	(1)
B	83.1	(31)	83.8	(30)	80.0	(25)
C	82.3	(16)	83.5	(16)	82.6	(13)
H	83.4	(37)	80.3	(36)	84.6	(34)
J	83.5	(23)	82.6	(20)	85.5	(21)
K	84.9	(12)	87.4	(11)	86.5	(11)
P	85.4	(25)	84.5	(23)	87.3	(25)
R	86.2	(44)	86.2	(38)	89.6	(42)
T	87.5	(44)	87.7	(45)	90.2	(42)
V	90.0	(26)	90.7	(26)	94.9	(25)
X	82.1	(18)	83.4	(17)	87.9	(19)
Z	78.6	(22)	80.7	(21)	83.4	(22)
D	-		69.4	(31)	74.5	(25)

(d) Calving

a. Some 76 hinds were yeld from the 315 hinds put to the stag and a further 32 hinds were not mated and were separate from the stag groups for use as yeld hinds on an NERC funded experiment. The yeld hinds were from the following groups:-

- 15 from the insemination trials
 - 12 from the pure Wapiti bull group
 - 10 were from the old hinds of the A, B and C cohorts
 - 12 were from the remaining regular aged hinds
 - 6 were from the F1 Wapita x red hybrid hinds
 - 32 were not mated and used on an NERC funded experiment
 - 3 were from the pure Pere David hinds
- 108

b. The calving started with the Pere David deer on 2nd May followed by the first red deer on 22nd May. The calving was in general later than in the previous year and may well have been due to the extremely wet conditions in the early part of the rut. The mean calving dates for the different groups are given in Table 4.

TABLE 4 Mean calving dates of hinds of each group

- a. Pere David - 14th May (4)
- b. Pure red deer - 17th June (122)
- c. Wapiti x red hinds - 25th June (18)
- d. (Wapiti x red) x red hinds - 1st July (81)
- e. Wapiti x (Wapiti x red) hinds - 26th June (5)

A total of 234 calves were born to the 315 hinds available to breed, a calving % of 74%, however if the yeld hinds which were the result of experiments are excluded, the calving % rises to 93.2% which is close to that one might expect for the Glensaugh herd, run on a purely commercial basis. The actual performance of the cohorts is given in Table 5.

(e) Birth weights of calves

The birth weights of the calves born were satisfactory for all the species of deer kept, pure and hybrid. The birth weights recorded are given in Table 6.

TABLE 5 The reproductive performance of the cohorts

Cohorts	Hinds to stag	Hinds died pre-calving	Hinds yield	Calves born	Calves still-born	Calves died birth - wean	Number of calves weaned	Weaning %
A	2	-	1	1	-	-	1	50
B	31	2	4	25	-	5	20	65
C	16	-	5	11	1	1	9	56
H	27	-	6	21	3	3	15	56
J	17	1	2	14	1	1	12	71
K	11	-	1	10	-	2	8	73
P	24	-	5	19	-	3	16	67
R	38	-	11	28*	3	6	19	50
T	38	-	9	29	1	4	24	63
V	22	-	3	19	2	1	16	73
X	16	-	1	15	-	2	13	81
Z	25	3	2	20	1	3	16	64
D	31	-	17	14	1	9	4	13
Hybrid								
Wapiti	11	-	6	5	-	1	4	36
Pere	6	-	3	3	-	-	3	50
David								
	315	6	76	234*	13	41	180	57%

*Includes set of twins

TABLE 6 Calf birth weights (Nos in brackets)

	Stag calves Kg	Hind calves Kg
Pere David	10.0 (2)	10.5 (1)
Reds	8.2 (70)	7.5 (61)
25% Wapiti	9.9 (35)	9.3 (41)
50% Wapiti	11.1 (10)	10.9 (8)
75% Wapiti	10.7 (3)	12.5 (2)

(f) Weaning

The liveweight of the calves weaned were lower than that recorded last year and can be attributed to the later birth dates and the cool and wet weather experienced in July and August. The hinds and calves involved in the NERC experiment were weaned a month later in late October, and so are much larger by comparison. The weaning weights of the various breeds and crosses are given in Table 7.

(g) Calf deaths

The total number of calves lost was 54. The losses from cryptosporidia /E coli/clostridial infections was again of epidemic proportions. The main causes of death were as follows:-

a. Stillborn	13
b. Cryptosporidia/E coli infections	15
c. Clostridial disease	9
d. Pneumonia	3
e. Viral infections	2
f. Abnormalities	3
g. Accidents	2
h. Cause uncertain	7
	54

The calf deaths to weaning represents 23% of those born. In an effort

to reduce the clostridial/pneumonia element as a cause of death, all the breeding hinds will receive an annual dose of the vaccine Heptavac P. The 1989 calving will be organised so that the period of active calving in any field is limited to three weeks. All late calving hinds will be calved in a fresh field.

TABLE 7 Weaning weights of calves 1988 (Nos in brackets)

	Liveweight Sept 87 kg		Liveweight Sept 88 kg		Average birth date *
Red Deer					
M	39.5	(48)	35.6	(39)	14 June
F	35.8	(43)	32.4	(36)	14 June
Late weaned reds					
M			46.3	(12)	2 June
F			46.4	(10)	31 May
Pere David					
M			60.0	(2)	20 May
F			67.0	(1)	7 May
Wapiti x red					
M	57.9	(7)	46.0	(9)	21 June
F	51.5	(6)	42.4	(7)	22 June
F2 (Wapiti x red) x red					
M	41.6	(17)	40.0	(25)	21 June
F	41.7	(13)	36.2	(35)	27 June
F2 Wapiti x (Wapiti x red)					
M	51.0	(2)	37.5	(2)	1 July
F	55.0	(1)	58.0	(2)	14 June

*NB: 1988 was a leap year therefore all birth dates advanced artificially by one day.

Date for A's, B's and C's is included in first groups, but also shown on its own.

(h) Disposal of weaned calves

All the deer calves are vaccinated at birth with Johnes disease vaccine. In order to test the efficiency of the treatment, all the store calves are retained until they are slaughtered at Turriff at 16 months of age where the carcasses are inspected and the lymph nodes examined for the presence of the disease or the existence of acid fast bacilli. In the first year the percentage of animals infected was reduced from 60% to 4.5% of all yearlings slaughtered.

(i) Sales of deer to the farmed venison market

The price over the year remained stable at 275.6p/kg dcw. A total of 135 carcasses were sold to the Waitrose Supermarkets and 66 carcasses were sold to Pelham Venison of Hertfordshire. Buchan Meats at Turriff slaughtered the animals and processed the carcasses for both markets. The list of sales and dates are given in Table 8.

TABLE 8 Prime venison sales 1988/89

Date	No of carcasses	dcw (kg)	@ 275.6p/kg £
29/09/88	2	84.0	231.50
13/10/88	7	306.5	844.71
20/10/88	6	338.0	931.51
27/10/88	6	285.5	786.85
03/11/88	6	292.0	804.77
10/11/88	6	256.0	705.50
10/11/88	33	1347.5	3,713.75
17/11/88	7	295.0	813.01
24/11/88	7	242.5	668.33
24/11/88	33	1046.4	2,883.75
01/12/88	7	232.5	640.77
08/12/88	7	242.0	666.96
15/12/88	8	269.0	741.38
22/12/88	6	197.0	542.92
29/12/88	7	255.0	702.76
05/01/89	7	228.0	628.37
13/01/89	6 Wap	417.0	1,149.23
19/01/89	7	231.0	636.66
25/01/89	7	233.0	642.16
03/02/89	7	217.0	598.05
09/02/89	7	240.0	661.44
16/02/89	6	202.0	556.71
23/02/89	6	186.0	512.63
TOTALS	201	7642.9	£21,063.72
AVERAGE		38.02	£104.79

(j) Sales to the Game Market (Culls)

Animals culled from the herd were sold to Mitchell of Letham (Angus) and are detailed below. Price obtained was 70p/lb = £1.54/kg.

90.

Date	No	Stock	Carcass weight in skin kg	Price per kg pence	Value £
02/08/88	1	Mature hind	54.5	165.1	90.00
21/12/88	2	Mature hinds	74.0	176.2	130.40
27/02/89	1	Young stag	48.0	181.8	87.30
					307.7

(k) Sales of hard antler

Hard antler removed from the stags pre-rut in September amounted to 52.3 kg and realised £253 at £4.84/kg.

(l) Breeding herd replacements

With the hindstocks currently running at 318, no yearlings were retained for the red deer breeding herd this year. However, eight hybrid Wapiti x red yearlings were retained for breeding.

(m) Hind deaths

Some seven hinds, all born in 1971 died of old age and one 72 born hind died from a malignant tumour on the pharynx. There were three deaths at parturition, and five hinds died of Johnes disease. One hind died from clostridial disease and four died from unidentified causes.

(n) Veterinary programme

The programme is designed to prevent a severe infestation of parasites, internal and external and to attempt to keep copper and cobalt at satisfactory levels. The full programme is given in Appendix 3.

(o) The 1988 rut

The weather in October and November was very mixed with torrential rain and gales in October with snow at the end of the month followed by a mild but wet November. The rut appeared to be at its height in mid to late October. The stags were introduced

to the hinds on the dates given in Table 9.

TABLE 9 Stag release dates 1988

1. Pere David bulls to pure hinds - running all summer.
2. Wapiti bulls to red hinds - 22 September.
3. Wapiti bull to hybrid hinds - 22 September.
4. Wapiti F1 hybrid bulls to red hinds - 22 September.
5. Red stags to hill group - 30 September.
6. Red stags to upper farm reseeds - 23 September
7. Red stags to NERC grant red hinds - 25 October and 30 November.
8. Red stags to melatonin treated red hinds on multiple ovulation experiment - 13 September.

3. LAND RESOURCES

(a) Land use

The heather hill areas of the deer farm are now mostly used for wintering the deerstocks and for maintaining yeld hinds during the summer months. The Upper Farm reseeds extending to 50 acres are used to provide good summer pasture for the hinds on the longevity experiment and any spare hinds and yearlings not presently involved with the current research programme. The good upland pasture is used primarily for the work of evaluating the Wapiti hybrids and crosses, venison production studies and the Pere David work.

(b) Fertility

The arable and reseeded areas were soil sampled in the late autumn and all the areas found to require lime had a total of 155 tonnes of Magnesium limestone applied during March.

All the upland sown pastures receive top dressings of Nitram 34.5% N at 50 kg/acre in March followed by four monthly dressings of 50 kg each of grazing fertiliser (27-6-6), and then a final application of 50 kg/acre of Nitram in late August. The reseeded pastures have a higher clover content and receive 50 kg of Nitram/acre in April and August with a mid-season application of grazing (27-6-6) at 50 kg/acre.

(c) Fencing

The re-fencing of the Upper Farm reseeds and the renewal of some of the temporary fences erected at the Lochhills area in 1980 continued during the year.

The Lochhills pen system was partially overhauled and deer gates were made to replace the existing sheep gates and the new drop floor crush was installed.

4. BUILDINGS(a) Provision of research facility

The large feed storage and service shed for the cattle cubicle building was altered as required to convert it to a facility with individual pens for work with deer and camelids. The facility will cater for the individual penning of 60 hinds or 30 camelids.

5. EQUIPMENT(a) Purchases

i. A drop floor crush was purchased from Barmossie Products (Eglin) to enable the handling of the large crossbreeds and the de-antlering of the stags.

ii A new Fraser 3.1/2 tonne tractor bogie was purchased to replace the very old wooden bogie which required expensive repairs.

6. STAFF(a) Permanent

W.J. Hamilton Officer-in-Charge

(b) i. Temporary - until November 1991

S. Busby Scientific Officer

D. Kyle Deer Stockman

ii. Visiting workers

Dr A. Mannelli from University of Pisa working on cryptosporidiosis in deer calves.

Mr Mathew Haydon on NERC funded work on the effects of Melatonin on lactating hinds and their calves and barren hinds at pasture.

(c) Casual workers

Students employed to assist with the research programme during the year were Moira Gallagher, Roy Berry, Gavin Hamilton and Sue Hawker.

APPENDIX 1GLENSAUGH DEER FARMVETERINARY PROPHYLACTIC PROGRAMME

	Yearlings and hinds	Calves 0-12 months	Stags
<u>February</u> mid-winter	Copper needles 8 g capsule Vit B12	None	Copper needles 8 g capsule Vit B12
<u>April</u>	Panacur	None	Copper needles 8 g capsule Ivomec
<u>May</u> (pre-calving)	Copper needles 8 g capsule Ivomec Heptavac P	3 weeks after turnout Ivomec Copper 8 g Panacur in June and July	Panacur granules in feed in June and July
<u>August</u>	Panacur and Copper 8 g Vit B12	Panacur Copper 2 g Vit B12	Panacur granules in feed
<u>September</u> (weaning)	Ivomec	Ivomec	Ivomec Coppavet inj Vit B12
<u>December</u> (post-rut)	<u>Adults</u> = <u>Yearlings for</u> <u>Stock</u> Heptavac P	(a) <u>Off grass</u> Ivomec (b) <u>Housed</u> Panacur	Ivomec Ivomec

RAHOY DEER FARM

This report covers the production period from the rut in October 1987 to the end of September 1988. The management of the herd was essentially the same as in previous years, except that the older ages (Cohorts A, B and C) were grazed on East Hill throughout the year rather than grazing in summer on the reseeded areas. The report also includes the Operating Account for the financial year 1st April 1988 to 31st March 1989 and the Gross Margin data.

1. WEATHER

The weather in the late autumn and early winter period of 1987 was mixed, with mild and wet spells followed by severe frosts and a very wet period in early January 1988. The remainder of the winter was generally wet with occasional periods of sleet or snow which affected only the higher ground. April, May and June were dry, sunny and warm - excellent weather for the calving hinds and yearlings calves - whilst the months of July, August and September were among the wettest ever recorded in Morvern Peninsula. October was dry and sunny, but November had some frosts and cold, wet and windy weather. During the year (Oct 87 to Sept 88) the rainfall measured at the farm was 2,323 mm (91.5 inches).

2. DEER STOCKS

(a) The rut of 1987

The hinds were in excellent condition as can be seen from their liveweights detailed in Table 2. The hinds were split into ten rutting groups, and as for last year, the yearling hinds were divided into two groups of 30 and 31 in relation to their liveweight, with the lighter hinds being given a preferential nutritional regime. The stags were released into the group on 21 September. A total of 579 hinds and 61 yearlings were rutted with the stags.

(b) Winter and spring supplementary feeding

Supplementary feeding commenced on 30 November for the yearling stocks, which were wintered on the Lower Grid Hill area. Feeding the adult hinds commenced on 7 December in the five main hill

wintering areas. The replacement stock calves were housed at the steading in November. The older hinds were fed hay and sugar beet pulp nuts until mid-February and thereafter were fed a standard 15% crude protein cattle concentrate (BOCM Ltd). The younger aged hinds and the yearlings were fed the cattle concentrate throughout the winter with hay as required. The mature stags were fed as a separate group near the steading. The younger aged stags were fed with their respective hind cohorts. The amounts fed to the deer stocks over the period are given in Table 1.

TABLE 1 Winter supplementary feeding of all deerstocks

Wintering area	Cohort	No of deer	Period fed 30/11/87-14/5/88			Total cost per head £
			Hay kg/hd	Sugar beet Pulp kg/hd	Cattle Conc kg/hd	
East Hill	A,B,C	150	63	44	77	21.59
West Hill	B,D,G	218	56	40	63	18.53
Upper Grid Hill	E,F,H	151	64	58	33	17.09
Caravan Park	Js	69*	76	0	89	19.10
Lower Grid Hill	Ks	71+	107	0	138	28.77
Steading	Ms	83++	154	0	170	37.12
Back of Steading	Mature Stags	27	266	0	10	24.06

NB: Hay costed at £85/tonne

Sugar beet pulp nuts at £121/tonne

Cattle concentrate at £142/tonne

*includes 9 young stags

+includes 10 yearling stags

++includes 9 stage calves

The overall cost of supplementary feed per breeding hind maintained was £26.48.

(c) Hind liveweights

The hinds were all in good condition at the rut in 1987 and were slightly heavier on average compared with previous years. By April 1988 the hinds on the West Hill wintering area had lost on average 8.7% of the September pre-rut liveweight. These hinds ate less supplementary feed over the winter period than any of the other cohorts. Winter weight loss in the hinds wintered on the East Hill was slightly less at 5.9%.

Those hinds which are now grazed on the East Hill all the year round had slightly lower liveweights in September than those recorded in the previous September but the younger cohorts all increased their liveweights over the year. The mean liveweights of each cohort are shown in Table 2.

TABLE 2 Hind liveweights

Cohorts	Liveweight (kg)		
	September 1987	April 1988	September 1988
A	87.8	82.3	83.9
B	86.3	80.0	85.5
C	87.3	83.1	85.4
D	87.1	78.8	87.7
E	85.2	84.0	89.8
F	88.0	85.5	92.3
G	84.1	77.2	84.9
H	90.6	83.6	91.6
J	85.0	85.4	88.0
K	74.5	73.9	83.7
M	42.6	54.4	78.6*
Mean LW adult hinds	86.8	82.2	87.3

* These yearling hinds are the heaviest produced at Rahoy to date.

(d) Calving performance

Calving started in mid-May and was almost completed by mid-June. A total of 603 calves was known to be born to the 640 hinds rutted with the stags, a calving rate of 94.2%. The performance of each cohort is given in Table 3.

TABLE 3 Calving performance of the cohorts

Cohort	Hinds to stag in Sept 87	No of calves born	Calving %	Hinds barren	Hinds died	Hinds to stag in Sept 88
A	65	62	95.3	3	1	64
B	60	55	91.6	4	1	59
C	77	76	98.7	1	2	75
D	74	70	94.5	3	1	73
E	28	26	92.8	2	0	28
F	45	45	100.0	0	0	45
G	92	88	95.6	4	0	92
H	78	76	97.4	2	0	78
J	60	58	96.6	2	0	60
K	61	47	77.0	14	0	61
M	-	-	-	-	-	60
TOTALS	640	603	94.2	35	5	695

(e) Birth weights of calves

The birth weight of the calves were very satisfactory and similar to those recorded last year. There was no difference between the birth weights of the hinds maintained on the East Hill and those hinds grazed on the reseeded pastures. The details for each cohort are shown in Table 4.

TABLE 4 Calf birth weights (kg)

Cohort	Hind calves	Stag calves
A	8.5	8.4
B	8.0	8.3
C	7.9	8.1
D	8.0	8.6
E	8.0	8.5
F	8.0	8.7
G	7.5	8.1
H	8.0	8.0
J	8.0	8.3
K	7.5	7.8
Herd average	7.9	8.2

(f) Weaning of calves and their liveweights

The East Hill group were weaned on 13 September to allow the hill hinds a longer period for liveweight recovery before the rutting in October and to stagger the weaning gather and facilitate the housing of the weaned calves. The main weaning gather commenced on 19 September. In order to accommodate the calf crop within the confines of the steading complex, it was necessary to hold a large number of calves in the central court with access to an outside uncovered concrete-floor area. After spending eight days in a bedded court and eating a full ration of concentrates and hay, 135 calves were put into the central court with access to the uncovered concrete apron at the north end of the steading. The weather was atrocious with torrential rain and strong winds throughout the whole of the weaning period. No losses were sustained but some calves started to scour and some remained outdoors throughout and began to lose condition. Covered space became available four days later and it was then possible to house all calves in the covered accommodation. This system of weaning will be tested again next year but with covered hay racks and concentrate troughs placed on the uncovered concrete yard.

The weaning weights of the calves were almost identical to that achieved last year. The hind calves averaged 37.2 kg and the stag calves 40.7 kg. The weaning weights of the calves born to each

cohort are shown in Table 5.

TABLE 5 Weaning weights of calves (kg)

Cohort	Hind calves	Stag calves
A	35.8	39.1
B	38.6	39.6
C	40.2	40.6
D	38.4	40.2
E	41.5	44.1
F	38.4	43.4
G	39.3	41.9
H	38.5	40.4
J	38.2	43.9
K	32.9	34.6
Herd average	37.2	40.7

At the September gathers 520 calves were weaned, and at the December gather a further 20 calves were weaned. There are approximately four calves still running with the hinds. This means that with an earlier sale of 15 calves, a total of at least 559 calves will be weaned giving a weaning percentage of 87.3% which is most satisfactory at this stage of the development of the resource.

(g) Calf deaths

Prior to the 1988 calving, 50% of the hinds allocated to the arable fields for calving were vaccinated with Heptavac 'P', used widely for protecting sheep against clostridial diseases. There were 18 perinatal calf deaths in these fields during the calving period. Fourteen of these were from unvaccinated hinds and four from vaccinated hinds. Post-mortem examinations were carried out on 15 of the calves and 12 out of the 15 were found to have died from a clostridial disease. Only two of these deaths were of calves from vaccinated hinds. These results suggest that vaccination with Heptavac 'P' will reduce the death rate in calves from clostridial disease. The initial cost of the vaccine is £1.20 per hind and thereafter there is an annual cost of 60p per hind. The total number of calves which were known to have died by weaning was 28 which is 4.6% of all calves born. However, there are 16

calves still unaccounted for and including these animals the calf death rate is 7.2%.

(h) Disposal of calves born in 1988

The total number of calves weaned to date is 555. These were disposed of as follows:-

Number of calves sold to Moredun Institute	15	
Number of calves sold to Rosemaund EHF	40	
Number of calves sold at Perth Auction Mart	399	454
Calves kept for stock replacement	82	
Calves not yet sold	12	
Calves died since weaning	7	101
		555

Approximately four calves have yet to be weaned.

(i) Livestock sales during the current financial year

	£
4 cull stag @ £180 each	720
7 small runt yearlings @ £50 each	350
15 cull yearling hinds @ £290 each	4,350
15 2-day old calves @ £95 each	1,425
40 stag calves @ £100 each	4,000
150 stag calves @ £108.95 each	16,343
152 hind calves @ £358.31 each	54,463
59 stag calves @ £105.05 each	6,198
20 hind calves @ £316.25 each	6,325
5 stag calves @ £87.00 each	435
13 hind calves @ £256.92 each	3,340
Gross livestock sales	£97,949

The auctioneer's commission, haulage etc has to be deducted from this figure to achieve the net amount.

Rahoy calves again topped the market at Perth Auction Mart this year with a pen of ten hind calves selling for a record price of £455 per head.

(j) Sales to the game trade (carcass)

Culled stags were sold to Duncan Fraser (Inverness) as follows:-

	£
3 cull stags (260 kg @ £1.65 kg) 5/09/88	429
4 cull stags (373 kg @ £1.65 kg) 2/10/88	616
3 cull stags (210 kg @ £1.65 kg) 9/10/88	347
6 cull stags (411 kg @ £1.65 kg) 22/10/88	678
	£2,070

(k) Sales of hard antler

Cut hard antler from the farm stags weighed 61 kg and was sold at £4.84 per kg to gross £295.

(l) Breeding replacements

As in previous years a full complement of hind calves were retained for stock hind replacements. The 72 hind calves will be reduced to 60 before turnout to grass in the spring. Ten stag calves have been retained and the best will be selected at two years of age to join the stock stags. The average liveweights at weaning of animals retained were hind calves - 43 kg and stag calves 52 kg.

(m) Yearling hind and stag performance

The 'M' cohort, born in 1987, averaged 42.6 kg at weaning in September and were turned out to grass in the spring weighing on average 54.4 kg on 13 April 1988. The average liveweight of the group on 22 September was 78.6 kg. This represents a summer growth rate at pasture of 149 g/day. These yearlings were 4.1 kg heavier than their counterparts at the same time last year.

The yearling stags retained for stock had an average liveweight of 96.4 kg in September 1988.

(n) Hind deaths

Five hinds died or are presumed to have died during the year.

A23 was found dead after calving on the East Hill.

B32 was last seen in very poor condition on the West Hill.

C39 suffered a prolapse at calving and died later.

C33 was last seen to be very lame on West Hill and is presumed dead.

D81 lost a lot of condition over winter and died. A post-mortem failed to identify the cause of death.

This represents a death rate in the adult hind stocks of 0.8%.

(o) Veterinary programme

The veterinary treatment programme for the deer stocks remained the same as for the previous year, with the exception of the Heptavac vaccinations. The full programme for all the deer stocks is given in Appendix III.

(p) The 1988 rut

The adult stocks were split into nine rutting groups. The yearlings were divided into two groups and rutted in the Upper and Lower Steading fields. Most of the cohorts were in excellent condition and the rut seemed to go well and was almost complete by the end of October. A total of 695 hinds were rutted with the stags.

3. LAND RESOURCES

(a) Land use

The arable and reseeded areas of the farm are used to maintain most of the deerstocks in spring and summer and during the rut. The hill areas are used for four or five weeks in mid summer to allow the inbye arable and reseeded pastures to recover for the rut, and they are used again in December through to April as wintering areas for all stock. The exception to this pattern is the East Hill area where the deerstocks are hefted to the hill area on an all the year round grazing system.

(b) Soil Fertility

The arable and reseeded areas were soil sampled and sent to the West College for Analyses. The report by SAC showed that all areas were low in phosphate. All areas received 1.1/2 cwt/acre of Granphos in August 1988. Most areas also required lime and this will be applied in the spring of 1989, weather permitting.

(c) Drainage

Another 1500 metres of new ditching was carried out on the better land of the East Hill.

(d) Fencing

The wind generator in Fank field required a new tail piece and a new battery. The gathering area at the rear of Kinloch Farm House was improved greatly by moving the raceway fencing to provide a much narrower funnel down to the access road to the farm steading. The dividing fence between the shore and Kinloch fields was replaced with a new fence of 6" Cyclone net.

(e) Road and bridges

The permanent staff with assistance from the caretaker of Rahoy Estate continue to grade and repair the roads as required.

The bridge across the Kinloch burn was found to be in need of repair and this is now in hand. The road will be closed to all traffic for two weeks while repairs are carried out.

4. BUILDINGS

(a) Farmhouse

A new septic tank was installed and all windows were double-glazed.

(b) Cottage

The garage door which had been damaged in the gales was repaired and refitted.

(c) Steading

A floodlight was installed in the new dual purpose shed. The court walls inside the old building were all treated with white Snowcem to help reflect to the maximum, the amount of light available.

(d) Office

The stone floor was tiled with vinyl tiles and the walls, doors and windows were all re-painted.

(e) Handling pens

A light was installed above the weigh crate to facilitate the recording of data required.

5. EQUIPMENT(a) Purchase and sales

For health and safety reasons the old pulley blocks were removed from the deer larder and a new chain hoist was installed.

A new 4 wd Zuzuki ATV was purchased in order to facilitate the proper and full recording of the hinds on the East Hill year round grazing system.

6. STAFF(a) Permanent

W.J. Hamilton	Officer-in-Charge
Callum Thomson	Stockman/Manager
Mrs Lynne Thomson	Recorder/Stockperson

(b) Casual

Assistance at the various gathers and the handling of the deer stocks was provided by Mr Donald Kennedy, Mr David Kyle, Mr Alan Sneddon, Mr Mathew Wilson, Miss Sue Hawker, Miss Carol Moir and Mr Gavin Hamilton.

7. FINANCIAL ACCOUNTS

Operating account for period 1st April 1988 to 31st March 1989.

<u>Expenditure</u>	£
Wages gross	12,158.80
Wages overtime	1,181.48
Casual wages	2,176.47
Travel and subsistence	4,476.35
Rent and rates	0.00
Property repairs	0.00
Heat, light and power	1,805.39
Insurance	0.00
Road Maintenance	0.00
Red deer purchases	0.00
Feeding costs	19,849.00
Veterinary expenses	5,183.17
Wintering costs	641.00
Seeds	144.00
Fertiliser	3,559.75
Fencing costs	141.01
Drainage costs	563.50
Motor vehicles	2,105.00
Tractors	0.00
Implements and equipment	428.35
Vehicle repairs	1,549.75
Machinery repairs	152.00
Petrol, oil and fuel	356.88
Machinery hire	2,492.28
Carriage	2,812.00
Post and telephone	541.58
Staff welfare	38.00
Sundry expenses	204.88
Auction expenses and commission	4,006.00
	£66,567.94

<u>Income</u>	£
Store calves	92,529.00
Cull hinds	4,700.00
Cull stags	2,790.00
Antler	295.00
	£100,314.00
<u>Farm Surplus</u>	£33,746.06

APPENDIX 1RAHOY DEER FARMGROSS MARGIN DATA1988/89

<u>Output</u> - per breeding hind	£
1. Sales of store calves	144.58
2. Sales of culled yearlings	7.34
3. Sales of culled stags	4.36
4. Sales of hard antler	0.46
TOTAL OUTPUT	£156.74
<u>Variable costs</u> - per breeding hind	
1. Feed	27.44
2. Fence maintenance	0.22
3. Casual labour	3.40
4. Veterinary costs	8.09
5. Carriage	4.39
6. Fertiliser	5.39
7. Sundries	6.58
TOTAL	£55.51
GROSS MARGIN per breeding hind	£101.23